Railway Age

WITH WHICH IS INCORPORATED THE RAILWAY REVIEW

FIRST HALF OF 1927—No. 29 NEW YORK—JUNE 18, 1927—CHICAGO SEVENTY-SECOND YEAR

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Volume 82 **Number 29**
Published Weekly by Simmons-Boardman Pub. Co., 30 Church St., New York, N. Y. Subscription Price United States, Canada and Mexico, $6.00; foreign countries (not incl. daily editions), $8.00; or £1.15.0, through London office; single copies, 25¢ or 1s. Entered at New York, N. Y., as second-class matter.

18, 1927

Railway Age

Vol. 82 June 18, 1927 No. 29

Cheshire Branch Train, B. & M., Near Baker Bridge, Mass.

Contents

Published every Saturday by the

Simmons-Boardman Publishing Company, 30 Church Street, New York

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NEW ORLEANS, MANDEVILLE, LA.

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Entered at the Post Office at New York, N. Y., as mail matter of the second class.

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions, $8.00. When paid through the London office, £1.15.0.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free: United States, Mexico and Canada, $1.00; foreign countries, $2.00; or, 10s. Single copies, 25 cents each, or 1s.

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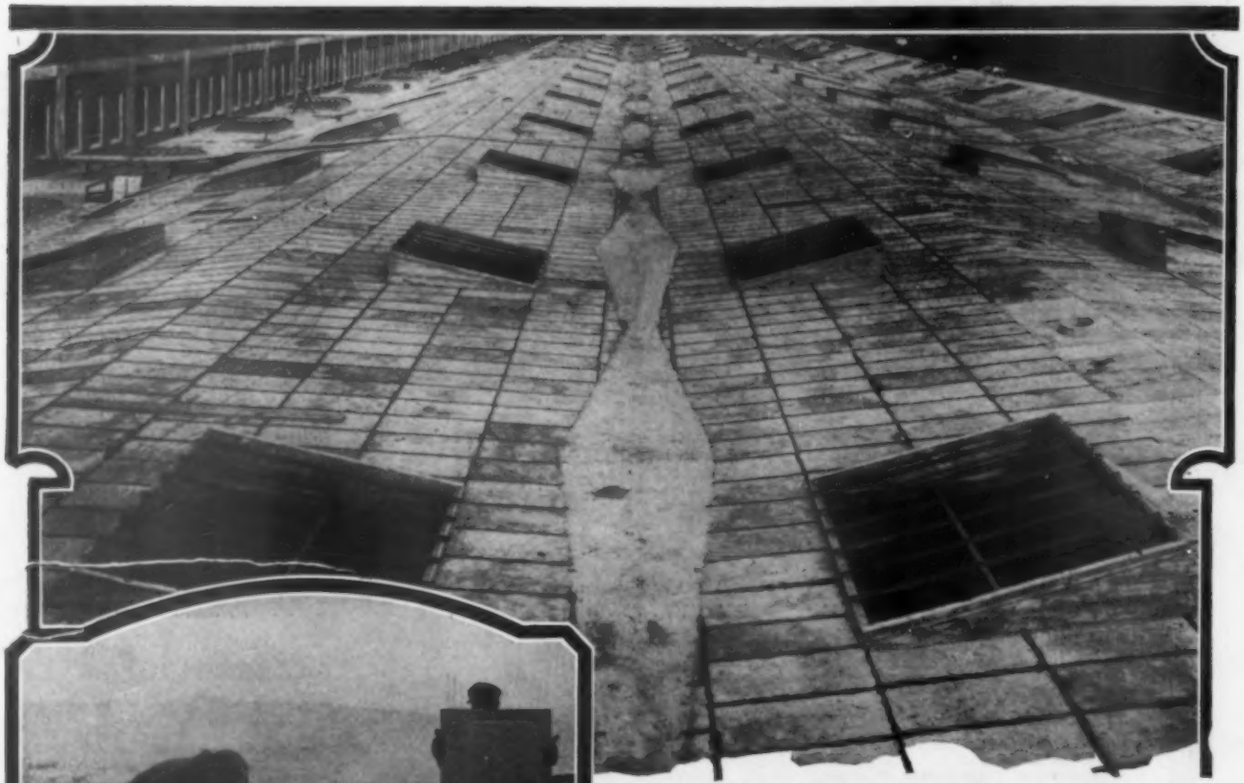

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Railway Age

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Railroad Club Activities

THE season which has just closed for most of the railroad clubs—the Pacific Railroad Club holds monthly meetings throughout the year—has in general been marked by unusual activity. While this applies to the clubs as a whole, two or three of them are deserving of special mention. The Cleveland Railway Club, which started out in a small way a few years ago, has broadened its objectives, as is indicated by its change in name, and is rapidly taking its place alongside the older and well-established clubs. The Central Railway Club at Buffalo leads all the others in the rapid growth of membership; indeed, as to total membership it is now treading uncomfortably close on the heels of the New York Railroad Club. The point in the case of the Central Railway Club, however, is that in spite of this rapid increase in membership, its meetings still continue to be distinguished by lively discussions. Ordinarily, the larger the club, the more difficult it is to get the members to discuss freely the papers and addresses. The Central Club, however, has been fortunate in preserving an atmosphere which seems to encourage a rather general participation in the discussions without too much formality. Several of the clubs took definite steps during the past year or two to encourage the attendance of younger men and even to prepare special programs for them. Apparently the results were worth while, for there seems to be a tendency on the part of several of the clubs to continue to feel a responsibility for encouraging and assisting the younger group.

Plenty of Bananas

THE Illinois Central's method of handling the banana traffic through New Orleans, described elsewhere in this issue, supplies an interesting study in specialized operation. Bananas are highly perishable and their propensity for freezing when it is at all co'd and ripening prematurely when it is hot render them a difficult commodity to handle. Speed and care are very necessary requirements to the successful movement of bananas. When it is taken into account that these bananas are shipped from New Orleans to points as far away as Vancouver, B. C., some idea of the difficulties may be obtained. One of the very important features involved in the movement of bananas is the matter of connections. Unlike most other freight, banana cars cannot be permitted to stand at junction points for hours awaiting connecting trains. They must be kept on the move, particularly when the weather is unfavorable. This involves an interesting transportation problem, which has been solved by close co-operation between the Illinois Central and its connections. Mounds, Ill., is the concentration point for bananas moving to the Northwest and Middle West and the Illinois Central, by careful study, and with the assistance of connecting lines, has so synchronized the movements of its trains of bananas out of Mounds to the various junction points in southern Illinois, that, when the cars arrive at these junctions, they are picked up at once by manifest freight trains of the connecting lines and taken on their way, with no more than a few minutes' delay. The progress of transportation science is nowhere better illustrated than by this highly specialized movement.

Elimination of Train Orders on Single Track

THE Central of Georgia has demonstrated the practicability of directing, from a remote point, the movements of trains on single track by signal indication without written train orders and without train rights by direction or time table. This installation is a somewhat different development from that placed in service about two years ago on the Missouri Pacific, which was one of the pioneer extensive installations to direct train movements by signal indication without written train orders on single track, a complete 50-mile district from Osawatomie, Kan., to Leeds, Mo., being so equipped. Following the publication of descriptions of this installation and an explanation of its operating advantages renewed interest was aroused in the possibilities of directing train movements by signals, the evident advantages being the flexibility of operation in that meeting points for trains can be changed at any time prior to the arrival of either train at the heading-in switch, and the further fact that the order could be given by signal indication at the time and place that action was to be taken by the engineman. The majority of the subsequent developments have promoted the idea of controlling all of the switches and signals on a division from one point, located either centrally or at one end. The Central of Georgia made a short installation of 4.5 miles of single track in March, 1924, and has now changed the signaling on a 25-mile single-track section to direct train movements by signal indication under control from two points. The article on another page in this issue shows that this installation is another step toward the elimination of the written train order as well as more economical and safer train operation on single-track lines.

Power for Electrification

THE relation between railroad electrification and power supply was again considered by the electrification of steam railroads committee of the National Electric Light Association in its annual report presented on June 8. The report offers the opinion that both the public and the power companies must take a share of the responsibility for electrification of suburban lines, and states further that there is need for better understanding between the railroads, the power companies and the pub-

lic. Railroads having electrified sections were asked by the committee for the reasons why electrification was adopted. In most instances more than one reason was given, but all were included in the following: increase of track capacity; improved operating facilities; relief of intolerable tunnel conditions; conservation of fuel by use of water power; legislative reasons. These reasons were presented quantitatively and it is interesting to note that increasing of track capacity constitutes 70 per cent of the total while legislative reasons account for only 12 per cent. At best such percentages can only be an approximation and the subject is more easily presented from the negative side. Railroad managements which decide against electrification do so because they can not see how operating expenses can be sufficiently reduced by electrification to pay for increased capital costs. However, no railroad which has adopted electric traction has regretted having done so. This signifies conservatism on the part of the railroads. It is generally conceded that there is not sufficient reason for electrifying the great bulk of railroad lines in this country, but without doubt a number of roads would proceed with electrification if they could arrive at a better understanding with the power supply companies. These companies should be able to sell power at less than the railroads can produce it themselves. Furthermore, the interests of the two are common and it should not be impossible to arrange a form of contract suitable to both.

What of Air Transport?

BECAUSE of the two recent spectacular airplane flights across the Atlantic the attention of the people of the Western world is, for the time being at any rate, directed as never before toward air transportation. What will come of it? Opinions differ, but a large number are apparently somewhat wildly optimistic. Air routes across the Atlantic and everywhere else where people want to go are predicted as early eventualities. Without sharing the opinions of the most optimistic air transport enthusiasts, however, it may well be the course of wisdom to avoid at the same time the less popular opinion that air transport has few commercial possibilities. Lately a book expressive of this unpopular opinion has appeared in England, where it has attracted wide attention. Moreover, the writer, who is careful to conceal his identity, is apparently a man of some ability who knows some of the problems of commercial flying. Modern Transport (London), however, points out that a little less than a century ago eminent engineers were devoting their time to prove beyond refutation that trans-Atlantic steamships were commercially impossible because the fuel necessary for the journey would crowd out remunerative cargoes of passengers and freight. Air transport has now a considerable history behind it and development during the last decade has proceeded with increasing momentum. When and if it is once conclusively determined that there are real commercial possibilities in the plane, its application will come about with the tremendous speed which now characterizes the adoption of new and improved articles and service by the public. How will the airplane fit into railroad service if its use should suddenly become widespread? We ask this question because we take for granted that all will agree that co-ordination, instead of uneconomic competition, should be the goal. There ought to be some man, high in the counsels of every railroad, so it seems to us, who will follow the situation closely so that, if looked-for developments come, no railroad may be without wise and friendly counsel as to its policy.

Brakes for Diesel Locomotives

ELSEWHERE in this issue will be found an interesting description of the essential features of the new Diesel electric locomotive which the Pennsylvania now has under construction. This was brought out in a paper read by F. K. Fildes before the recent meeting of the Central Pennsylvania Section of the American Society of Mechanical Engineers at Altoona, Pa., and a number of points bearing on the various phases of the development of Diesel locomotives were developed in the discussion which followed the reading of the paper. One of these points of particular interest from an operating standpoint is the problem of securing an adequate supply of compressed air for the brake system in locomotives of this type. In the description of the Pennsylvania locomotive, attention is called to the special arrangements which have been made in an attempt to provide a more nearly adequate supply of compressed air at times when the main power plant is idling, which are the times when the greatest demands on the compressor are likely to be made. With either direct mechanical or electrical drive, the speed of the compressor is materially reduced when the engine is operating at its idling speed, in the latter case indirectly through the reduction of generator voltage available to drive the compressor motor. On many present installations this difficulty is overcome by manually speeding up the power plant which, at best, is an expensive way to secure the small amount of power required by the compressor. The scheme worked out in the case of the Pennsylvania locomotive is undoubtedly an improvement over the rather sketchy provisions which have commonly been made for maintaining adequate braking power. Even this arrangement, however, can hardly be said to go far enough to be a finally satisfactory solution, because it is a compromise which still expects some reduction in compressor capacity at idling speeds. Ultimately, if Diesel locomotives are to operate in road service, provision must be made for complete compressor capacity at all times, even if it requires a storage battery or an auxiliary gasoline power plant.

Getting Track Work "Laid By"

A NOTICEABLE tendency in late years is the growing practice of making the heavy renewals of rails and ties early in the season so that the "polishing up" of the track and roadway may proceed in an orderly manner through the rest of the year, thereby following the custom of the Corn Belt farmers who find that little other constructive work can be done until the corn has been "laid by." In this practice the maintenance of way department undoubtedly has been aided by the change in the beginning of the fiscal year from July 1 to January 1, but of even more importance in this respect is the policy adopted by many roads of laying rail and doing other work in the winter, together with the use of labor-saving machinery which renders winter work possible and which expedites progress, whether used in the winter or spring.

The road which has its new rail program completed early in the year is in a position, not to take things easy, (a consummation devoutly to be wished for but never attained in maintenance matters during the summer season), but to renew the ties and surface the track where the new rail is laid with full consciousness that the work can be completed so that any soft places may be detected and the track put in the proper condition for the advent of winter, despite the multitudinous other tasks which must be done during the summer.

The use of machines for performing maintenance work expedites progress, not alone by the increased output of the machine over hand labor, but also by reducing the labor turnover, due to the elimination of the heavy physical exertion necessary with the track materials of today. While there are many who believe that a greater hourly output per man on the track can be secured with the eight-hour day than with a ten-hour working period, it has been found that where machines are used the extra gangs often prefer the ten-hour day on account of the greater daily earnings and that the loss of physical efficiency toward the close of the day is no greater, and indeed in many cases is not as great as occurs among men working eight hours without machines.

Strengthening Steel Bridges by Welding

THE application of electric welding to the strengthening of the Chicago Great Western's bridge over the Missouri river, described elsewhere in this issue, opens a new field for intensive study by the railway bridge engineer. The march of progress in autogenous welding has left the builder in structural steel far in the rear, for while this process is being employed intensively on a commercial basis in many industries, its application to steel structures is still in the experimental stage. Structural engineers are conservative, and properly so. They enjoy a record marked by a singular absence of failure which they can ill-afford to jeopardize.

The riveted joint is a positive connection which is capable of field inspection and test that cannot be duplicated in the welded joint. Furthermore, the fabrication of structural steel is a highly developed industry in which practices have become so well standardized on the basis of the essential requirements of riveted connections that any change as revolutionary as the replacement of riveting by welding cannot be carried out without a drastic revision of these thoroughly established industrial practices.

Of a widely different aspect is the application of additional metal to old bridge members as a means of increasing their strength. This has been done exactly as in the fabrication of new members in the shop, namely, by means of riveting, but without opportunity to apply the highly developed equipment and processes employed under shop conditions which have given steel fabrication the reputation for efficiency which it enjoys today. Rather, it entails the drilling of new holes in the old metal or the cutting off and backing out of old rivets so that the old holes may serve for the connection of the new steel. It is therefore because welding involves no disturbance of the old member or its connections that it offers particular advantages in the reinforcement of old structures.

The work on the Leavenworth bridge was confined to increasing the sections of flanges and chords, and the degree of efficiency with which this work was done can readily be ascertained by systematic strain gage measurements for the determination of the relative deformation of the old and new steel under live load. Information on this point would be of marked value to students of electric welding as applied to structures. There are, however, other sources of weakness in steel bridges which could well be subject to experimental application of the welding process, as, for example, the inadequate riveting of flanges. It would be of interest to ascertain whether the bead welding of flange angles to the web could serve as an effective means of supplementing the flange rivets. The railways have such an enormous investment in steel bridges built for lighter loadings than those now prevailing that any method designed to increase the facility with which such structures may be strengthened offers enormous opportunities for constructive economies.

The Costs of Government and of Railway Service

THE need for "more business in government" is well illustrated by a comparison between the increases that have occurred since before the war in what the public pays for government and for railroad transportation. The National Industrial Conference Board has made such comparison possible by recently compiling and publishing statistics showing the aggregate increase that has occurred in the expenditures of all our governments, local, state and national, since 1913, the year before the war began in Europe.

By a coincidence the total amounts the American public paid for government and for railroad transportation in 1913 were almost the same. The total cost of government was $2,920,000,000. The total earnings of the railways were $3,193,000,000, but they paid $122,000,000 of this in taxes to the governments, making the net cost of railroad transportation $3,070,000,000. The National Industrial Conference Board reports that in 1925 the aggregate cost of government had increased to $11,124,000,000. To get a figure that will compare fairly with that for 1913 there should be deducted from this amount about $1,653,000,000 for payments of principal and interest on the war debt made in 1925. This leaves $9,471,000,000 as the cost of government due to causes other than the war, an amount 225 per cent greater than that for 1913. The total earnings of the railways in 1925, less taxes paid to the governments, were $5,882,000,000, or 91 per cent greater than in 1913.

A large part of the increased cost of railroad transportation was due to the fact that the amount of freight service rendered increased 40 per cent. How much did the service rendered by the various governments increase meantime? That it increased there can be no question, but did it increase enough to justify an increase in the cost of government two and one-half times greater relatively than in the cost of railroad transportation?

We are constantly hearing from somebody that the increased cost of railroad transportation has been burdensome to production and commerce, especially to the farmers. The Interstate Commerce Commission justifies its failure to make the rates of the railways high enough to enable them to earn a fair return on a fair valuation on the ground that traffic could not stand the rates. While in 1913 government and railroad transportation cost about the same, in 1925 government cost about $3,600,000,000 more than railroad transportation. The taxes paid by the railways to help defray the increased cost of government have increased over 200 per cent. In other words, the government body that regulates the railways thinks that, with an increase of 40 per cent in freight service, an increase of less than 100 per cent in their earnings is all the public should bear, while the government bodies that tax the railways have increased their taxes 200 per cent and other government bodies have increased the total expenditures for government 225 per cent.

Tie Stock as a Criterion

ONE of the outstanding achievements of the railways in recent years has been the marked reductions that they have made in the amounts of materials carried in stock. The focusing of attention on this subject has resulted in the clearing from the shelves of millions of dollars' worth of obsolete materials. It has also led to the more careful ordering of supplies to prevent over-stocking and waste, with the result that large sums have been released for other and more constructive uses. As with all reforms, however, there always exists the danger that they will be carried too far. It may properly be said, without reflection on the splendid results that have been achieved by reductions in stocks, that this campaign has been carried too far in some instances. This is evidenced by the status of tie stocks on more than one road, a situation that is accentuated by the rapidly growing practice of treating ties with the attendant necessity for adequate seasoning of the timber before treatment.

Ties constitute the largest single item of material expenditure of the railways, with the sole exception of fuel. There is a particularly strong incentive therefore for supply officers to endeavor to keep the investment in this material to the minimum. Opposed to this consideration is the fact that a tie must be seasoned for a period of six months to a year before treatment, depending on the kind of wood, if best results are to be secured from the treatment. For a road to carry its requirements of ties in stock for a period of this length, in addition to that required for their orderly treatment and distribution, calls for a large investment and adds very materially to the inventory of materials on hand.

To avoid this, a number of expedients have been adopted of late. Some roads have asked the producers from whom they purchase their ties to hold them in their own stocks until they are seasoned and the road is prepared to take them. This keeps them out of the road's accounts until they are either ready for treatment or, if treated by the producer, until they are desired for insertion in the track. It, of course, costs the producer as much and probably more to carry this stock than it does the railway and he must be reimbursed for this expense by a higher selling price, so that the actual economy effected by the road by this means is at least a doubtful one and the saving made by reason of a low inventory is, as far as this account is concerned, largely an imaginary one.

More frequently, however, a road postpones its purchase of ties beyond the proper time, either purposely to hold its inventory down or by reason of a failure to realize the importance of proper seasoning of the timber. It is, of course, possible to produce a tie and to treat it ready for insertion in track in a few weeks. This, however, does not permit it to season or to be treated properly and the result is that its service life in the track is reduced. The fact that it is *possible* to get ties in a fraction of the proper time not infrequently creates a false sense of security from which purchasing and maintenance officers awake too late. It is not uncommon for this awakening to lead a road to frantic efforts to protect its requirements at a late date, with a resultant forcing up of prices and lowering of inspection standards, both of which add materially to the cost of the ties, measured by their service life.

Those roads whose tie service records are most satisfactory today have learned that such records are possible only when ties are produced, seasoned and treated in an orderly manner, with reasonable regard for the avoidance of large stocks, but without making the size of the inventory the governing consideration. Railway executive officers and particularly purchasing and maintenance of way officers should give this subject attention now and throughout the year in order that they may know that their stocks of ties are being maintained currently. A small stock of ties is not necessarily an evidence of efficiency.

The Economics of Commissioner Eastman

FOR some time it has been becoming plain that the man who is most influential in determining the policy of regulation favored by a majority of the Interstate Commerce Commission is Commissioner Joseph B. Eastman. The history of his opinions regarding railway ownership and valuation is therefore especially interesting at the present juncture in the struggle over valuation.

Mr. Eastman became a member of the commission by appointment of President Wilson in February, 1919. The railways were then being operated by the government. William G. McAdoo had retired as director general, but was advocating a continuance of government operation for five years. One of Mr. Eastman's first acts as a commissioner was to make public his views regarding certain railway matters. He sent a letter to the Senate Committee on Interstate Commerce (*Railway Age*, June 11, 1919) in which he said, "I believe government operation has not had a fair trial," and that "better results can be obtained by maintaining and improving national operation than by returning to old methods, in whatever guise." He added, "In the case of capital, national operation has a clear and marked advantage, one of great public consequence. The credit of the United States is squarely behind the roads, and it is certain that capital can be obtained at low cost without underwriting syndicates, commissions or bankers' profits." He made clear that he did not believe in any of the advantages from private initiative and enterprise that it was claimed would be derived from returning to private management.

Early Views on Ownership and Valuation

The Transportation Act was subsequently passed for the purposes of returning the railways to private management and establishing a policy of regulation under which it could be made successful. A few months later the Interstate Commerce Commission rendered a decision in which it made its original tentative valuation and granted large advances in rates. Mr. Eastman wrote a separate opinion concurring in the advance in rates but making statements that are significant in view of subsequent developments. He repeated his views in favor of government operation, saying, "It was my hope that federal control might be continued because it was evident that the transition back to private operation would create additional disturbance in a time of unsettlement and unrest, that existing railroad facilities could be made to do more work and meet more nearly the transportation needs of the country under unified control than under the control of many separate companies, that the additional facilities which are so greatly needed could now be provided more easily and more economically by the public than by private capital and that the disturbances resulting from both rate increases and labor difficulties could be reduced to minimum if the government retained direct responsibility for the roads."

He opposed the commission making a tentative valuation at that time. "It will almost certainly be misunder-

stood," he said, "and may have an unconscious influence upon our valuation work for the future from which it ought to be free," and he added, "It is my conviction that the valuation doctrines which are prevalent in railroad and public utility circles and which have been urged upon us are fundamentally unsound in many respects and subversive of the public welfare."

Importance of "the Man Behind the Laws"

A few months later, on November 30, 1920, Mr. Eastman delivered an address before the Boston Chamber of Commerce in which he again advocated government ownership. Referring to the Transportation Act, he indicated his lack of confidence in it by saying, "I have no faith in the magic of any legislation or of any policy." He continued (the italics are ours): "This is a government of laws and not of men. *But the man behind the law is as vital as the man behind the gun.* No railroad policy will succeed without the support and earnest effort of the people of the United States. * * * *The crucial test of the present policy will come in the securing of capital.* If the government owns the roads whatever capital is needed can be secured at relatively low cost. If the roads are left in private hands the cost of capital will be greater. *But more important than this is the doubt whether it can be secured at all when it is needed and where it is needed.* The question of management is more difficult. The problem has never been faced and dealt with courageously and constructively. It is not a problem which the American nation with its creative and inventive genius needs to fear. *It is not as difficult as the successful functioning of a dual system of private management and rigorous public regulation.*"

All Mr. Eastman's pessimistic anticipations regarding the effect of the return of the railways to private management have thus failed to be realized. Six years after he made his Boston speech the railways were handling an increase of 16 per cent in freight business with a reduction of 21 per cent in operating expenses. When he made his speech they had a large car shortage, while six years later they were handling the largest freight business in history while maintaining a minimum surplus of more than 100,000 cars. In November, 1920, they earned only $51,000,000 net operating income, and in November, 1926, almost $115,000,000, although freight rates had been reduced an average of 15 per cent.

Views Not Due to Special Experience

In attempting in his separate opinion in the O'Fallon valuation case to justify the Interstate Commerce Commission in adopting a basis of valuation inconsistent with decisions of the Supreme Court, Mr. Eastman said, "In determining such questions knowledge of pertinent facts and an experience which makes it possible to visualize the probable results of a particular public policy are quite as important as familiarity with the law books. * * * Such knowledge it is the peculiar duty of this commission to acquire. As to such matters it occupies a daily front seat upon the stage, while the Supreme Court of necessity is only an occasional visitor in the balcony."

The record demonstrates that Mr. Eastman's present opinions regarding questions of public policy affecting the railways were not formed, and have not been altered, as a result of his study and work as a member of the commission. They were already formed when he became a member of it, and after having seen as a commissioner all the great increases in the efficiency of service and in economy of operation that have been effected under private operation during the last six years, he still emphasizes, as he did when he had just become a commissioner, the importance of restricting the cost of capital in the railroad industry, and virtually ignores the much greater importance of good service, economy in operation and the best means of attaining them.

He still indicates his government ownership point of view, and the premises from which he reasons regarding regulation, by saying in his opinion in the O'Fallon case, "In the case of publicly owned utilities not a cent has been or will be added to the public burden from past investment by reason of the increase in general price level." He condemns even the majority of the commission for recognizing the present prices of land in valuation, saying, "I am unwilling to believe that the constitution is an instrument of public oppression." In other words, he is so apprehensive that investors in railways will get too large a return that, first, he favors government ownership in order to restrict them to the interest they would receive upon government bonds, and, secondly, he insists that if the railways are to continue to be privately owned the return of investors in them shall be restricted to a low percentage upon the number of dollars invested in them, with a large deduction for depreciation, regardless of changes in the value of the dollars in which their valuation is stated. These were his principles when appointed to the commission, and after eight years are still his opinions, despite his reference to the special knowledge it is the duty of members of the commission to acquire and be guided by in their work.

Government Ownership and Regulation

As was pointed out in an editorial in these columns last week, the advocate of government ownership always emphasizes the saving in cost of capital that will be secured under that policy, while the advocate of private ownership always emphasizes the better service and the saving in the cost of operation that will be secured under private management. The public, by returning the railways to private operation, announced its readiness to forego the advantage of the lower cost of capital under government ownership in order to get the much greater advantages of good service and lower cost of operation under private management. An obvious danger in the present situation is that the view of the government ownership advocate as to the return that should be allowed on railway capital will be made to prevail under government regulation with the result of rendering it impossible under private ownership to raise enough capital.

No man has emphasized more strongly than Commissioner Eastman the necessity of maintaining an adequate flow of capital into the railroads. He said in his Boston speech in 1920 that the crucial test of private ownership subject to government regulation will come in the securing of capital; and yet he advocates an extreme policy of valuation having for its purpose the most rigorous possible limitation of the return upon capital. His attitude indicates that a man who sincerely believes in government ownership cannot at the same time favor the kind of regulation essential to the success of private ownership. There is nothing surprising in this. How could a man sincerely believe that private ownership should be abolished and at the same time sincerely believe it should be regulated in the interest of its perpetuation?

"The successful functioning of a dual system of private management and rigorous public regulation"—to quote from Mr. Eastman's speech in Boston in 1920—will, indeed, as he then anticipated, become more difficult in time than even successful government management if the rigors of regulation are to be what he would make them.

Banana Train at an Inspection Point in Mississippi on the Illinois Central

Handling the Nation's Supply of Bananas

Illinois Central creates highly specialized transportation organization for this traffic

THE Illinois Central handles approximately 28,000 cars of bananas out of New Orleans annually, which is from 65 to 70 per cent of the total movement of this fruit through that port. During the busy season, which lasts from April to August inclusive, nearly 3,000 cars a month are handled. This traffic amounted to 27,750 cars last year, including 13,431,000 bunches and 1,612,000,000 separate bananas, or enough to supply 14 bananas to each inhabitant of the United States.

New Orleans is the principal banana port of the United States and supplies a large section of the country with the fruit. Bananas are shipped from New Orleans to points as far distant as Vancouver, B. C., and practically every state, except those on the Atlantic seaboard, is supplied through this port.

The ability to handle such a vast volume of a highly perishable commodity with negligible loss and damage is the result of years of experience in this form of transportation and of very careful study and analysis of each transportation element involved. The principal element necessary for the safe handling of bananas is extreme care in loading and fast movement after loading. The majority of the bananas are still green and unripe upon arrival at New Orleans, but climatic changes have a rapid effect on the fruit and even a slight delay in handling, or a variation of a comparatively few degrees in the temperature of the cars may have serious consequences.

Highly specialized traffic such as this requires specialized equipment and the problem of car supply has had to be given careful attention. The I. C. owns 5,691 refrigerator cars, of which 1,000 are equipped with permanent floor racks and are intended primarily for the banana service. A considerable percentage of the refrigerator cars owned by the I. C. are kept in banana service almost constantly, and for seven months of each year it is not necessary to use any outside equipment. During the heavy shipping season from April to August, refrigerator cars of the Northern Refrigerator Transit Co., specially equipped for banana service, are rented to take care of the overflow business, since during this period as many as two ships are frequently unloading at each of the three banana docks.

The return of empty cars to New Orleans is also a problem that requires careful watching, particularly during the rush season. During the slack season, the refrigerator cars returning south for banana loading are utilized for carrying merchandise in the direction of New Orleans, or, if there is none available, they are hauled empty to Memphis or some other point on the line south of Chicago for loading there to New Orleans or vicinity.

From April to August, however, when these cars are badly needed in the south, not only for banana loading, but for the Louisiana fruit and Vegetable movement, they are handled south in solid trains of empties. These trains leave Chicago at noon daily and are handled on regular manifest schedules through to New Orleans. Empty cars received from consignees or connections at points south of Chicago are given equally prompt handling, and, for the period mentioned, the same fast movement as if they were loaded with manifest freight.

The return of refrigerator cars from connections is always watched very closely in the busy season. Just before the business begins its seasonal increase, all connections are notified of the necessity of the prompt return of empty "freezers" to the I. C. Each connection is checked closely, and, since much of the banana traffic is unrouted beyond the I.C., they are glad to cooperate in returning the cars promptly. Consignees have also been educated to the necessity for unloading cars promptly during the height of the season.

Cars Cleaned and Inspected Thoroughly

Empty refrigerator cars for New Orleans are delivered at the Harahan shops, just north of the city. At this point, they are inspected and put in shape for banana loading. The cars are cleaned thoroughly, since dirt has a bad effect on the fruit. In summer, any ice left over is removed and in winter it is necessary to remove a quantity of dirty straw. Cars without permanent floor racks are equipped with temporary racks. These racks are necessary to permit the circulation of cool air in summer and warm air in winter. If the weather is hot, the cars are iced and made air-tight. If it is cold, straw is placed in the cars to keep the bananas from freezing and the cars are made air-tight by closing all the ice-bunker drains and other openings with plugs and weather-stripping. The ideal inside temperature of a banana car is 60 deg. and cars are kept at that temperature or as near as possible winter and summer.

After the cars have been prepared, they are inspected and passed on by the railway car inspectors, and by representatives of the fruif companies as well. The cars are then classified into two groups, one for loading green bananas and the other for loading ripening bananas. When the cars pass inspection and are marked as fit for loading and classified, they are taken to the yards at Stuyvesant docks, where they are light-weighed. From these yards, they are distributed to the banana wharves as the ship arrivals require.

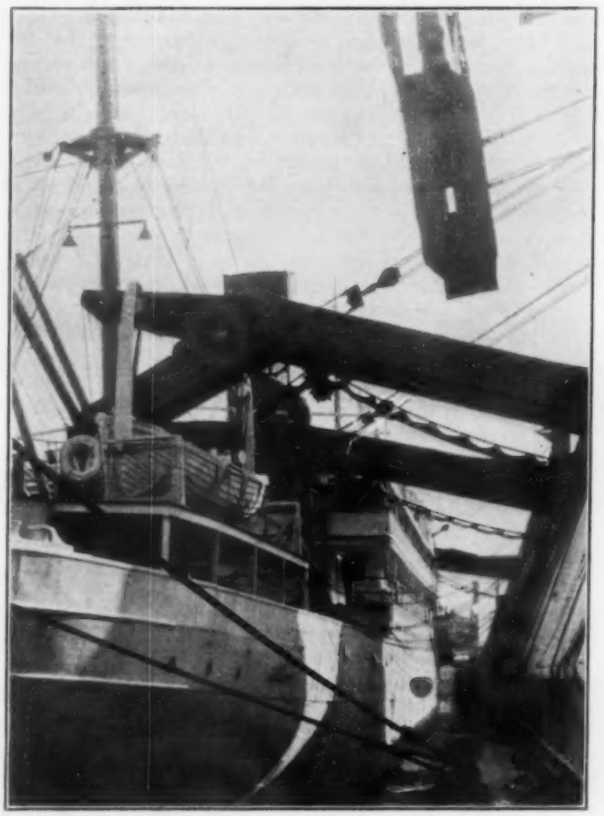
Several large fruit companies have regular service of banana boats between Central American plantations and New Orleans, besides some few irregular sailings. The capacity of these boats varies widely, ranging from 20 carloads to 110 carloads, or even more. The boats dock at three wharves which are especially designed for banana unloading. The Thalia Street dock is served by the I. C. Two other docks, one at Desire street and the other at Pauline street, are served by the Public Belt Railway of New Orleans.

As soon as a banana steamer arrives at the mouth of the Mississippi river, 100 miles distant and 8 hours' sailing time from New Orleans, a radio message is sent to the fruit company's offices, giving the name of the boat, the dock at which it will arrive, the expected docking time, and the number of bunches of bananas it contains. The fruit companies transmit this information to the I. C. and arrangements are made to supply the wharf where the ship is to dock with refrigerator cars in condition for banana loading.

All cars for loading at the Desire and Pauline street docks are delivered to the Public Belt by the I. C. at Stuyvesant yard, and are returned to that point by the Public Belt when loaded. An I. C. representative is stationed at each of these docks, who superintends the loading of cars that are to move over that road.

Operations at Thalia dock are conducted entirely by the I. C. In addition to 11 loading tracks, with a capacity of 5 cars each, there is a small yard adjacent to the dock, known as the levee yard. When a boat is unloading, a switch engine is assigned to the dock to spot and pull the loading tracks, and, frequently, if it is a large boat, or if two boats are unloading at once, two or even three switch engines are employed. The necessity for grading the bananas as they are loaded requires a more or less complicated set-up of the cars on the loading track. The fruit company representatives at the dock notify the railroad as to their needs as far in advance as possible, and the empties are switched into their proper order in the levee yard, before being placed on the loading tracks.

Each of the three banana docks is equipped with several unloading towers, for transferring the fruit from the vessel to the dock. The usual method, for large boats, is to work four unloading towers on each boat at one time, two at the forward hold and two at the aft



Banana Unloader Lowered into the Hold of a Banana Boat at New Orleans, La.

hold. The towers are on tracks and are moved up and down the dock alongside the ship to any location desired. Each tower is equipped with a conveyor, consisting of an endless chain of canvas cradles. This chain is lowered from the top of the tower into the hold of the ship through an unloading well. It is impossible to load bananas in a ship in bulk, because the weight of the top bunches would crush those underneath. Accordingly, false flooring is put into the hold and the fruit is loaded two bunches high, in from four to six stages, depending upon the size of the vessel. In unloading, two of these stages are worked at once, the unloading gang at the lowest level dropping bunches of bananas into alternate cradles, while the men at the top stage fill in the gaps. In every case, on the ship, on the dock and in the cars, where bananas are dropped or lifted into place, straw mats are used to prevent bruising the fruit. Each of the unloading towers has a capacity of 2,500 bunches an hour, from the hold of the ship to the dock. At the Desire street and the Paulina street wharves, the bananas are carried from shipside to the cars by hand, but at the

Thalia street wharf the fruit is brought almost to the car doors by a system of belt conveyors.

At the latter wharf, the fruit coming from the ship is transferred from the canvas cradles to the belt conveyors, and inspectors are stationed at strategic points to grade it as it goes by and instruct the banana carriers as to the car in which it is to be loaded. This grading is governed by two factors, first, the relative ripeness of the fruit and second, the number of "hands" to the bunch. The term "hand" is applied by fruit dealers to each cluster of bananas on the stem, thus, a bunch having seven clusters, for example, is called a "seven-hand" bunch.

The grading for relative ripeness requires a practiced eye, for, to the uninitiated, the bananas appear to be merely yellow or green, as the case may be. But the fruit is classified into several shades of green and several shades of yellow. Fruit which is ripe when unloaded will, of course, deteriorate long before it reaches the consumer if an attempt is made to ship it. Accordingly, ripe or near ripe fruit is not loaded into cars, except, occasionally, into a trap car, but is sold at the dock to local banana dealers. Fruit that is in no immediate danger of spoiling is loaded into the cars, and all fruit loaded into one car is at about the same state of development. In addition, each car is tagged according to the size of bunches that are to be loaded into that car. That is to say, all eight-hand bunches are loaded together in one car, nine-hand bunches in another car, and so on. A careful record is kept of the size and state of development of the fruit in each car, for use later in determining to whom the fruit shall be shipped. Each banana carrier handles one bunch at a time, and, as he enters the car, he passes through a turnstile with an automatic recording device, so that, when the car is loaded, the recorder shows the number of bunches that have been loaded into that car.

Although the interval from the time the bananas leave the ship until they are loaded into the car is relatively short, they are without protection from the weather during that time. Accordingly, when the temperature is lower than 42 deg. or higher than 95, unloading is suspended for the time being. During cool weather, stoves are kept burning in the cars while they are on the tracks at the dock. These stoves are removed just before the car is pulled out, but since the car is air-tight, the accumulated heat is sufficient to prevent the bananas from freezing before reaching their destination.

The loading tracks are "pulled" as fast as the cars are loaded, and the cars are taken into the levee yard, where they are assembled into cuts of 20 to 30 cars and moved to Stuyvesant dock yard. Here the cars are weighed on the same track scale on which they were light-weighed. It is necessary that this weighing be careful and accurate, since, in addition to being used for assessing freight rates, the bananas are sold by the shipper on the basis of the railroad weights.

When a sufficient number of cars have been assembled at Stuyvesant for a train, a crew is run light from Harahan to pick them up. Banana trains average 60 cars and their rating is 3,000 tons. The fruit needs careful watching enroute and all but one of the shippers send messengers with the trains for this purpose. An extra caboose is added to the train for their convenience. The shipper who does not send messengers with the cars has resident attendants at various points on the line, who meet the trains and perform the necessary work.

In practically every instance, the banana cars are slip way-billed to Mounds, Ill., for orders. Two special banana clerks in the local freight office at New Orleans handle all billing, diversions and reconsignments. The fruit companies have their inspectors' reports as to the contents of the cars enroute, and the sales are made while the cars are moving northward. It is only in rare instances that a car reaches Mounds before definite billing instructions have been received by the railroad, but in these cases, the car moves on to one of the fruit company agents, who disposes of it as best as he can.

Normally, the fruit companies send bills of lading to the banana clerks the day after the train leaves New Orleans. Shipping instructions are then wired to Jackson, Miss., to Memphis, Tenn., or to Mounds, depending upon the interval before the instructions are received. The agents at those points then make waybills for the cars, exactly as if the cars had been billed from New Orleans originally and copies of these bills are sent to the agent at New Orleans so that he may issue the bills of lading and take the revenue accruing into his accounts.

The Mounds Facilities

After leaving New Orleans, the banana trains are run through to Mounds, Ill., where special facilities for banana handling are situated. Enroute to Mounds, the fruit is carefully watched by the messengers, who make a thorough inspection of the cars in their care and open or close the hatches and perform such other work as may be necessary to keep the lading in good condition.

The banana house at Mounds is equipped to readjust the temperature of the cars. In summer, the cars are cooled, after being spotted in the house, by means of a piping system, which furnishes refrigeration. This same system is converted into a heating plant during the winter, so that the cars may be reheated, after their run from New Orleans, before proceeding to their northern destinations.

From Mounds, the bananas move to Chicago, St. Louis or Indianapolis over the Illinois Central, and there is in addition a large movement that is delivered to connections at junctions between Mounds and Chicago, such as to the Pennsylvania at Effingham, Chicago & Eastern Illinois at Ullin, Baltimore & Ohio at Odin and Cleveland, Cincinnati, Chicago & St. Louis at Mattoon.

Special transportation arrangements have been made with all connections handling bananas, so that the movement is scheduled in such a manner that the banana cars are picked up at the junction point by the connections within a short time after their arrival there. The Illinois Central also maintains a banana unloading house at Chicago, which is equipped with doors and may be entirely closed, so that the cars may be kept at the proper temperature before unloading and while unloading.

After a dull year in 1923, when only 24,480 cars of bananas were shipped over the I. C., and only 36,246 cars moved out of New Orleans in all, as compared with 44,907 cars the previous year, the banana movement has been steadily increasing. The I. C. handled 25,907 cars in 1924, 26,911 in 1925 and 27,750 last year, and the movement so far this year is holding up as well. More than two thousand cars of bananas were shipped over the I. C. in each of nine months in 1926 and 3,370 cars were shipped during the peak month, which was May. Some idea of the magnitude of the movement may be gleaned by expressing the total movement last year, 27,750 cars, in different terms. If these bananas had been handled in a single train, there would have been 240 miles between the locomotive and the caboose. Such a trainload could have paved the space between the rails from Chicago to New Orleans eight inches deep with bananas. Laid end to end, the separate bananas would have formed a line more than seven times around the earth at the equator.

Train Movements Directed by Signal Indication on C. of Ga.

Elimination of written orders permits quick change in meeting points on busy 25-mile section of single track

Take-Siding Signal

Leave-Siding Signal

West End of Byron

THE Central of Georgia has recently placed in service a unique signaling system on a 25-mile section of busy single track between Terra Cotta, near Macon, Ga., and Carman, near Fort Valley, in which train movements are directed entirely by signal indication, no rights being given to any train by direction or class. The 28.6-mile section from Ft. Valley to Macon handles the most important and dense traffic on the Central of Georgia. Short sections from Macon to Terra Cotta junction, 3.1 miles, and from Ft. Valley to Carman, 2 miles, are double-tracked while the intervening distance from Terra Cotta to Carman, 23.6 miles, is single track. It is on this section that the special signaling is used. Lap sidings are provided at four intermediate stations, Rutland, Echeconnee, Byron and Powersville. The line traverses a rolling country with a maximum grade of one per cent in each direction.

During the Florida tourist season, from November to April 15, five through Florida trains are handled each way daily by the Central of Georgia between Atlanta, Ga., and Albany via Macon and Ft. Valley. These include the Flamingo, the Southland, the Dixie Limited, the Dixie Flyer, and the Dixie Express. In addition there are five Central of Georgia passenger trains each way daily, making a total of ten passenger trains each way per day over this 25-mile section of single track, in the winter season. In the summer about eight passenger trains are operated each way daily.

The freight traffic normally requires about five or six through trains each way daily and one local, excepting Sunday. The major portion of the famous Georgia peach belt is served by the Central of Georgia and its traffic is handled northbound between Ft. Valley and Macon. During the crest of the peach season from June 1 to July 15, as many as 20 perishable freight trains are moved northbound in 24 hours.

In 1914 automatic block signals were installed on this division to promote safety and to increase the track capacity by reducing the spacing between following trains. With this protection, form "19" train orders only were used to direct train movements, which increased the flexibility of operation and reduced the number of train stops. However, with the growth of passenger traffic, especially the through Florida business and the increased movement of peaches, further track capacity was required.

While consideration had been given to building a second track, the signal department, at the suggestion of the division superintendent, submitted a proposal for a system of signaling to direct train movements by signal indication. Such a system had been used since March, 1924, on a 4.5-mile section of single track from Macon to Paynes on the Atlanta division. All movements to and from this territory, including several industrial spurs, were controlled by signal indication, eliminating numerous train orders. In other words, the interlocking limits were virtually extended to include this 4.5 miles of single track.

Standard Principles Used

On this same basis it was decided that the 25 miles of single track from Terra Cotta to Carman could be considered as interlocking territory, insofar as signal indications were concerned. All circuits were based on standard interlocking practice, although a few unique ideas were used to utilize line wires for certain circuits which at a particular cycle of operation were not otherwise in use.

The ideal arrangement would have provided for the operation of all of the switches by power-operated remote control switch machines; however, it was desired to hold expenditures to a minimum and, therefore, only two power switches were installed, both at strategic points where the elimination of train stops is of special advan-

tage to trains entering or leaving sidings on account of grades. A spring switch at the end of the double track at Carman eliminates the necessity of trains stopping at that point.

The signaling is controlled by two operators, one at Byron and another at Terra Cotta. As Terra Cotta is at the end of the yard and at the end of double

Desk Levers at Byron

track, operators have always been required for the handling of trains and the throwing of switches there. It was, therefore, considered essential to retain operators at this point and the installation was arranged so that the Terra Cotta operator controls the signals from the eastbound signal *8R* at the leaving end of Echeconnee to Terra Cotta. An operator located at Byron (the center of the remaining distance) handles all the signaling from signal *18L* opposing signal *8R* to Carman.

Absolute signals (designated by square-end blades) are located at each end of every block, the limits of each block being indicated by brackets and numbered as shown in the diagram. The entering signals for the two ends of each block are controlled by one lever, which, when thrown to the right, clears the eastbound signal and when thrown to the left, the westbound signal, provided in each case that the block is not occupied by a train moving in the opposite direction.

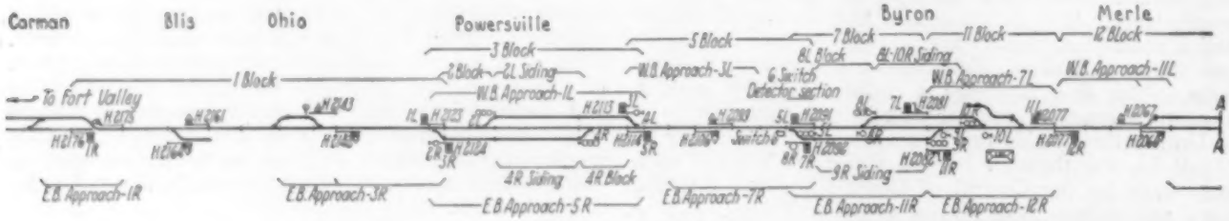
If, for example, an eastbound train is to be moved straight through, the operator at Byron throws levers 1, 3, 5, 7, 11, 12, 14, and 18 to the right, which causes the corresponding signals to go to the clear position, provided all the track is clear. At the same time the operator at Terra Cotta moves his levers 8, 4, 2, and 1 to the right which gives the train clear signals all the way from Carman to Terra Cotta. For a westbound movement these levers are thrown to the left, which drops all eastbound signals to stop and clears the corresponding westbound signals. As it is impossible to throw one lever both ways at one time it is impossible to clear two signals for opposing trains to enter any section of track. The signal levers are provided with approach locking only, which is released by time releases or back contacts of repeater relays for the track circuits ahead of the signals. The function of indication locking usually provided on the signal lever lock circuits is accomplished by inter-control of the control relays of opposing signals. Instead of locking the signal levers through the track circuits between the opposing signals controlled by the lever, such track circuit locking is accomplished in the controls of polarized relays located in the control station. The control of these relays is such that although the leverman may operate his lever to the L or the R position, the polarized relay corresponding to that lever will not shift to the corresponding position unless all track circuits between opposing signals controlled by the lever are clear. However, if the lever is left in the original position the signal automatically clears up behind a train to permit following movements as with automatic signals. If it is desired to stop a following train the lever can be moved to the center position.

Before a signal clears an automatic check is made that all opposing signals to and including the absolute signal at the other end of the block are in the stop position. Approach locking is used throughout so that once a train has accepted the distant signal to a block the operator cannot take the block away from that train and clear the signal for an opposing or conflicting move.

A red light signal unit with a black letter *S* on the cover glass is located at the entering end of each passing track to indicate to an approaching train that it must take the siding.

To indicate to the crew of a train on a siding that they may line the switch and head out, a dwarf light signal is located near the fouling point. This dwarf signal has a frosted white unit with a white letter *S* and yellow and red units. The dwarf light signal is both lever and track circuit controlled. The white letter *S* indicates that the main line switch may be thrown, after which if the lever is still in the proper position and the track unoccupied the red and *S* lights go out and the yellow light is displayed, authorizing the train to proceed out on the main line and to the next signal.

Telephone booths are located at the leaving end of all passing tracks with connection to both dispatchers' and operators' wires, so that train crews can communicate with the dispatcher as well as the operator.



Track and Signal Plan from Terra Cotta to

Train Movement for a Meet

Indicators on the desk lever machine in the operator's office show the location of all trains in the territory and the dispatcher is in constant communication with the operators by loud speaking telephones so that he knows where each train is at any moment. For example, an eastbound freight may be out of Ft. Valley and a passenger out of Terra Cotta and the dispatcher may have decided originally to let the freight take siding at Byron for the meet. When the freight passes the end of double

track at Carman the operator informs the dispatcher, who may find that it, for some reason, has lost time and may decide to change the meet to Powersville, in which case he so directs the operator at Byron, who then places levers 11, 7, 5 and 3 to the left, causing signal *3R* to go to stop and then moves lever 2 to the right, which lights up the take-siding light signal on signal *H2124* so that when the freight arrives at intermediate signal *H1242* the engineman will receive a caution indication and when approaching signal *H2124* will see that the arm is at stop and that the take-siding signal is displayed. The brakeman then throws the switch and the train pulls in the clear, the movement at the same time being indicated to the operator, who then throws lever 1 to the left, allowing the passenger train to proceed through Byron and on through to Carman without a stop. As no train orders have been issued, the engineman on the passenger train had no knowledge of the original line-up for the meet nor did he know of the change; all he had to do was to proceed as long as he had clear signals.

As soon as the passenger train passes Powersville the operator at Byron is informed of this by his indicator and he, by throwing lever 4 to the right, can change the indication in the leave-siding signal *4R* from red to white with the letter "S" illuminated. The brakemen then throws the switch and the letter "S" and the red indication are eliminated; the engineman pulls out (which is again indicated to the operator) and, in the meantime, the operator clears signal *5R* and the train proceeds, stopping, of course, to allow the rear flagman to close the switch. Where power switch machines are used, such as at the eastbound entering siding at Byron, a lower yellow light signal *8R* indicates that the switch is lined up for the approaching train to take siding, eliminating the need of a train stop. By means of his indicators the operator can tell accurately which of two trains approaching a meeting point will reach there first and so determine which shall take the siding.

The characteristic feature of this system is that the order for each train movement is given in the form of a signal indication *at the point* where any change is required. These signal indications need not be given until a short time before the train approaches the caution signal. Therefore, the train dispatcher has an opportunity to arrange meeting points with the greatest degree of flexibility so as to result in the least delay to trains.

Why Such a System Is Required

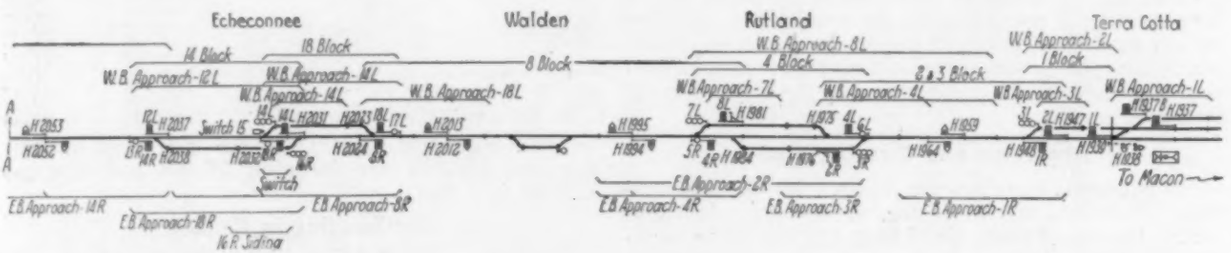
Especially during the winter season when the through passsenger trains sometimes run behind schedule it is difficult for the dispatcher to get enough information from connecting lines to show within 5 min. when these trains will be handed over to his division. It is, therefore, impossible in such cases to arrange meets without causing other trains to lose an excessive amount of time. Even with operators at four points between Terra Cotta and Ft. Valley, the orders could not be changed quickly enough to take advantage of any delays less than 30 to 45 min.

Likewise in the peach season irregular train movements are so frequent that many trains would be needlessly delayed on account of not knowing beforehand the exact time that other trains are to leave terminals.

Examples of Operation

On May 16 train No. 43, a westbound second class freight train, left Terra Cotta on time and if the operation had been governed by train orders and time table, the logical meeting point (as it would have been determined by the dispatcher) would have been Powersville for eastbound first class train No. 94. As No. 43 was not required to respect schedule time, it made good time from Terra Cotta to Byron, the next open telegraph office, and when the operator and dispatcher became aware of this condition the signals, which had been set originally for No. 43 to take siding at Powersville, were cleared and No. 43 was allowed to run to Carman, the station at the end of double track, 5.4 miles beyond Powersville. This saved No. 43 from being delayed 25 min. and also saved at least one ton of coal, for when leaving the passing track at Powersville the engineman would have had to start his train on a steep ascending grade.

A Remote Control Switch



Carman, Showing Limits of Each Block

This saved Extra 663 east about 30 minutes of time.

On May 17, if trains had been handled by time table and train orders it would have been proper to have held Extra 663 east, at Fort Valley to meet No. 33, a first class eastbound train. The time involved would have made it possible to run this train to Powersville to meet No. 33; but Extra 663 had full tonnage and if it had been run to Powersville it would not have reached the station east of the point (Byron) any earlier than it did and would have consumed considerably more coal on account of the heavy grade eastbound when pulling out of the siding at Powersville. Knowing that Extra 663 east could be put in the siding at Powersville if it did not make good time it was run east out of Carman. However, the indicators showed that it was making time as anticipated, and hence this extra was run east through Powersville to Byron where it was headed into the siding at the remote-operated switch without stopping No. 33. This move would not have been made without the remote-controlled switch. The use of signals and power switch in this instance saved 35 min. time to Extra 663 east.

On May 21, an interesting series of movements was made for four trains; No. 4, first class eastbound, No. 12, first class eastbound, No. 33, first class westbound, and Extra 664, eastbound, perishable freight. Train No. 4 entered the controlled territory at Carman three minutes late and if trains had been operated with time table and orders, it would have received an order at Fort Valley (West of Carman) to meet No. 33, which train would have been stopped and delayed at least ten minutes (partly on account of a grade) at Echeconnee and would delay No. 12 ten minutes on a meet order at Byron.

By using the signals, No. 4, being late, was headed in at Byron, five miles west of Echeconnee, and met No. 33 there instead of at Echeconnee. This delayed No. 4 ten minutes but avoided delays to No. 33 and No. 12, both heavy trains, and at the same time permitted Extra 664 east, a perishable train, which was in the siding at Echeconnee, to proceed east to Macon ahead of No. 4 and No. 12. This saved Extra 664, 30 min. delay as well as the time saved on 33 and 12. Train No. 4 made up the lost time before reaching the terminal.

One great advantage of operation by signals is that if freight trains do not get out of the terminals on call they do not cause any delay on the line to opposing trains which may be given orders to meet at non-telegraph stations, based on the calling time of the trains leaving terminals.

Apparatus and Circuits Used

No additional signals were required for the new system. However, several of the signals were moved to permit the use of every bit of main track possible in advancing a train on the main line to the clearance point of the switch which might be used by a train taking siding. The control equipment consists of a set of standard Union Switch & Signal Company desk type lever units, which are mechanically interlocked to prevent conflicting movements as between the sidings and the main line.

The line control circuits for the automatic signals were carried on a lower cross-arm added to the existing telegraph pole line. With the change over to the new method of using the signals, several more line wires were required, especially near the control stations. Therefore, it was decided to build a separate pole line on the opposite side of the track for use exclusively for the signal line control circuits.

Southern pine poles treated full length with creosote were spaced 35 to the mile. For ordinary line away from towns or highway crossings the poles are Class B about 30 ft. long. Creosoted cross-arms, steel pins, and porcelain insulators were used with No. 10 solid hard-drawn, weatherproof line wire. The cables from the line poles to the relay cases are made up of single conductor No. 12 solid insulated wires with a 3/16 in. stranded messenger with a strain insulator about midway of the length of the cable. The poles are guyed from ways at each signal location and also at each half-mile point.

The development of this method of operation has been sponsored by H. Baldwin, division superintendent, and S. G. Brannon, trainmaster, and was designed and installed by the signal department under the direction of E. B. DeMeritt, signal engineer.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended June 4, which included the Memorial Day holiday, amounted to 911,298 cars, a decrease of 33,566 cars as compared with the corresponding week of last year and of 86,945 cars as compared with 1925. All districts showed decreases as compared with last year except the Pocahontas, and all classes of commodities except livestock, which showed an increase of 3,106 cars. The cumulative total for 23 weeks of 1926 amounts to 22,263,864 cars, as compared with 21,864,675 cars in the corresponding period of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, JUNE 4, 1927

Districts	1927	1926	1925
Eastern	204,489	218,107	234,715
Allegheny	187,355	191,328	199,178
Pocahontas	55,878	54,969	51,808
Southern	135,733	140,391	144,198
Northwestern	145,484	147,292	160,178
Central Western	117,674	124,824	133,271
Southwestern	64,685	67,953	74,895
Total Western districts	327,843	340,069	368,344
Total all roads	911,298	944,864	998,243
Commodities			
Grain and grain products	36,418	36,836	38,163
Live stock	28,665	25,559	27,317
Coal	139,572	154,550	153,217
Coke	10,371	11,548	9,214
Forest products	64,420	70,860	77,809
Ore	58,013	62,544	66,237
Mdse. L.C.L.	227,510	234,455	258,894
Miscellaneous	346,329	348,512	367,392
June 4, 1927	911,298	944,864	998,243
May 28	1,026,397	1,080,786	913,087
May 21	1,016,803	1,039,070	987,306
May 14	1,029,126	1,029,748	985,879
May 7	1,024,416	996,216	983,034
Cumulative total, 23 weeks	22,263,864	21,864,675	21,360,861

The freight car surplus for the last week of May averaged 256,448 cars, including 78,148 coal cars and 133,345 box cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended June 4 totaled 62,099 cars, an increase over the same week last year of 502 cars, and an increase of 8,185 cars over the previous week, the holiday in the previous week being a factor.

	Total for Canada			Cumulative totals to date	
Commodities	June 4, 1927	May 28, 1927	June 5, 1926	1927	1926
Grain and grain products	5,171	5,407	7,215	167,753	155,322
Live stock	1,778	1,550	1,792	43,554	44,290
Coal	7,308	5,164	5,902	137,514	100,760
Coke	161	185	299	7,289	9,359
Lumber	4,535	3,982	3,916	76,219	75,363
Pulpwood	2,220	1,792	1,943	91,288	69,716
Pulp and paper	2,277	2,274	2,388	49,062	56,285
Other forest products	3,221	2,724	3,245	70,847	74,577
Ore	1,583	1,446	1,882	32,028	33,366
Merchandise, l. c. l.	17,651	15,393	16,780	367,120	344,328
Miscellaneous	16,194	13,997	16,235	284,430	275,148
Total cars loaded	62,099	53,914	61,597	1,327,104	1,238,514
Total cars received from connections	34,581	37,801	34,361	856,841	822,560

The Diesel-Electric Locomotive

Paper on new Pennsylvania-Bessemer switchers presented at section meeting of A. S. M. E. at Altoona

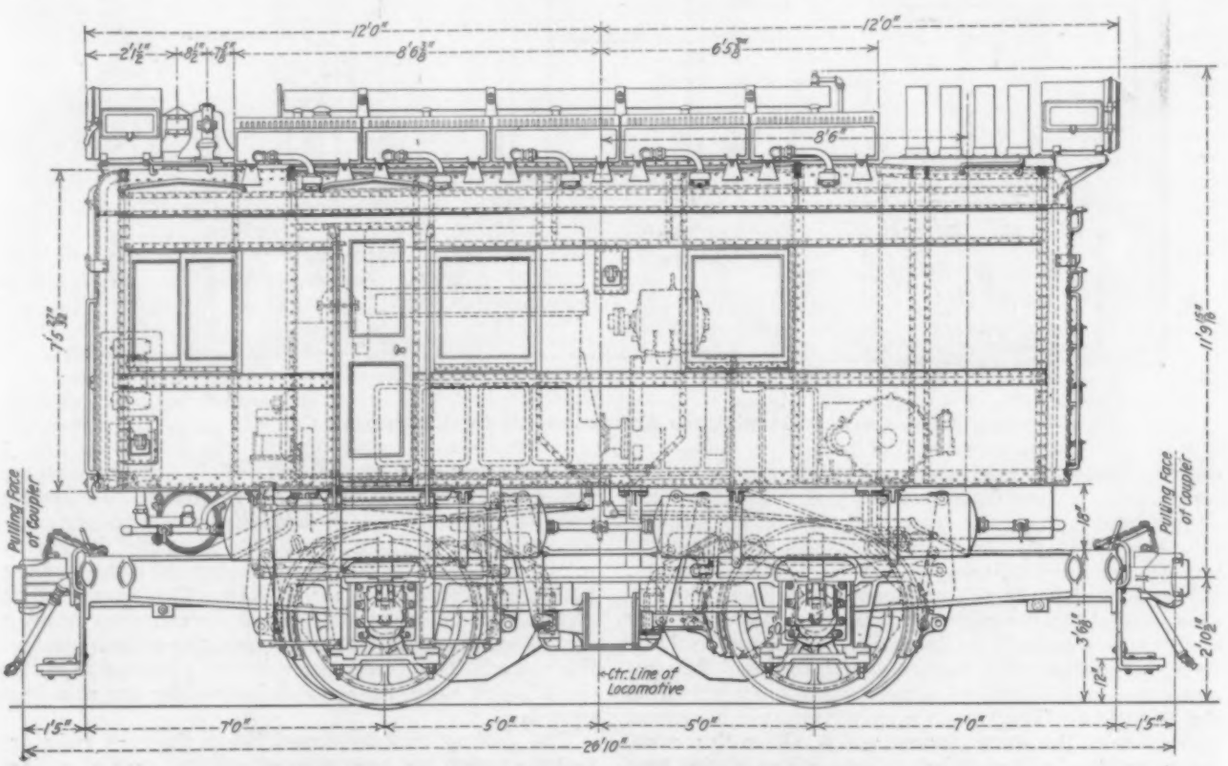
THE meeting of the Central Pennsylvania section of the American Society of Mechanical Engineers held at the Penn-Alto Hotel, Altoona, Pa., May 6, 1927, was well attended, over 100 members and guests being registered, of which about 35 were mechanical engineering students from The Pennsylvania State College. F. G. Grimshaw, works manager, Pennsylvania, Altoona, presided. Two papers were presented and discussed: R. N. Miller, assistant enginer, Pennsylvania, Altoona, Pa., presented a paper on the design and construction of the master plate fulcrum scale which was recently installed by the Pennsylvania at Altoona. The second paper was on the subject of the Diesel-electric locomotive, presented by F. K. Fildes, assistant engineer, Pennsylvania, which was largely a description of the new Pennsylvania-Bessemer four-wheel switching locomotives. The presentation of both papers created considerable discussion. The discussion of Mr. Fildes' paper brought out a number of interesting facts relative to the economy and flexibility of operation of the Diesel locomotive as compared with that of the steam locomotive. The following is an abstract of Mr. Fildes' paper:

The Pennsylvania-Bessemer four-wheel Diesel locomotives

The mechanism used to transmit the torque of the engine from the crankshaft to the traction wheels of any car or locomotive powered with an internal combustion engine, is as important as the engine itself. At the present time, the engine design seems to have outstripped the transmission, especially in the case of the nearly constant speed Diesel engine of more than 200 hp., for up to that point the conventional gear transmission and clutch, as is used in trucks and buses, afford sufficient speed ratios without excessive weight, cost or mechanical complications.

Up to the present time the greatest number of locomotives have been equipped with electric transmissions, which indicates that it is the only practical and reliable type yet developed, particularly for high powered units. It is flexible, has high starting torque, is quite efficient over a large range of speed and eliminates sudden shock loads on the engine that are always possible when gears and clutches are used. The control is comparatively simple and is readily adapted to double-end or multiple unit operation and it compares favorably in weight and price with either the hydraulic or geared type. This is the type of transmission that has been selected for the Diesel switching locomotives now under construction by the Pennsylvania at its shops at Altoona, the general specifications for which are as follows:

Wheel arrangement	0-4-0
Type of service	Switching
Length over coupler faces	26 ft. 10 in.
Total width	10 ft. 6 in.
Maximum height above rail	14 ft. 8 7/8 in.
Diameter of wheels	50 in.
Length of wheelbase	10 ft.
Weight of complete locomotive, estimated	130,000 lb.



Side Elevation of the Pennsylvania Diesel-Electric Switching Locomotive

Weight of Diesel engine	20,000 lb.
Capacity of fuel tanks	250 gal.
Estimated starting tractive force	40,000 lb.
Tractive force with forced ventilation for motors	12,500 lb. at 12¾ m.p.h.
Tractive force with natural ventilation for motors	8,200 lb. at 18¾ m.p.h.
Engine b.hp.	500 at 800 r.p.m.
Main generator, 330 kw. at 800 r.p.m.	550-600 volts

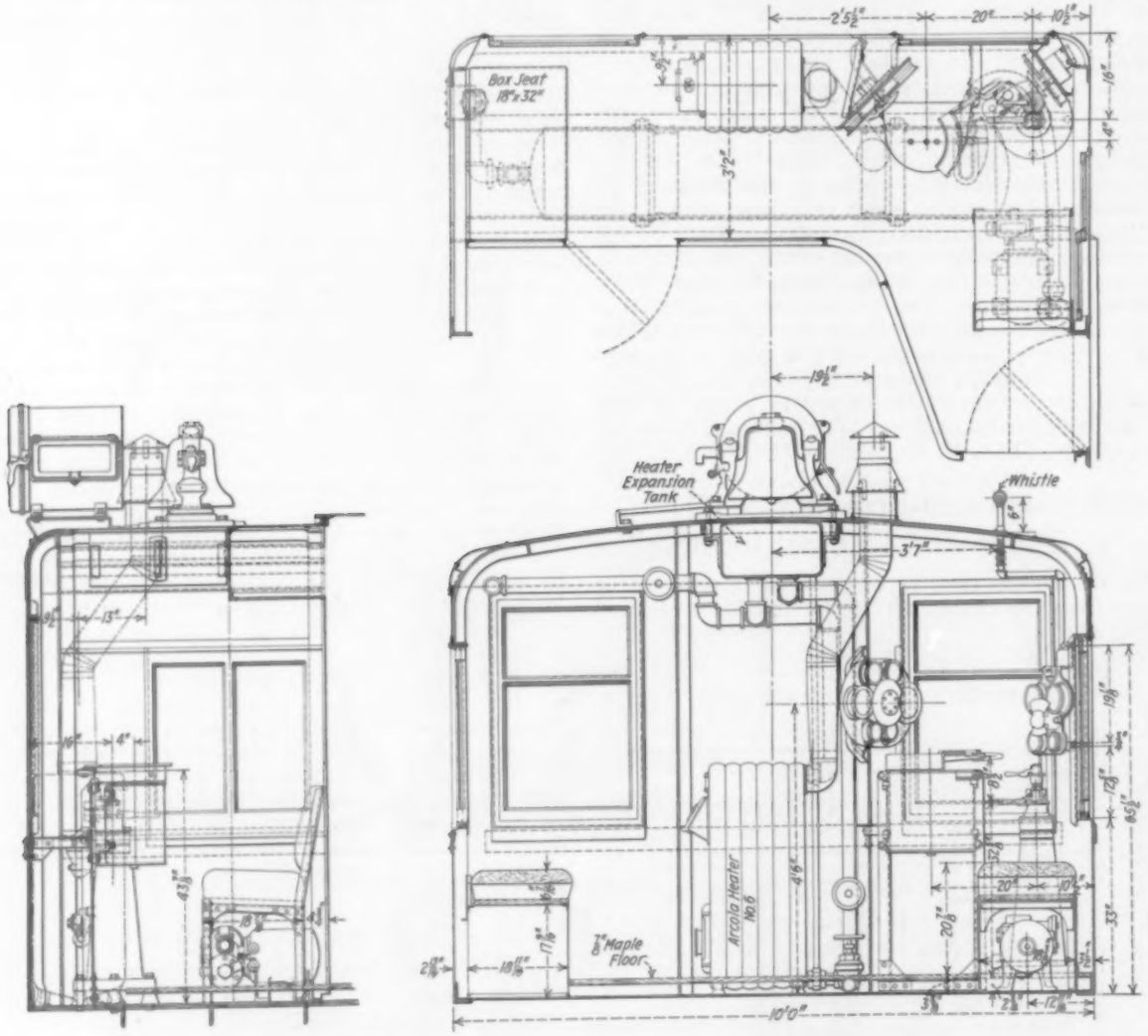
The locomotive is designed for single-end control, but double-end or multiple unit control may be easily arranged. However, for a unit only 24 ft. long, together with the service for which they are intended, single-end control seems adequate.

There are several features in the general design of these units that are somewhat unusual. The Diesel engines have a normal speed of 800 r.p.m., which is considerably higher than previously used in equipment of this kind, although it is claimed that oil engines developing 1,000 hp. or more, designed for air craft service, are operated at speeds as high as 1,200 r.p.m. While 800 r.p.m. is the governed speed, both the engine and electric equipment have been designed for momentary overloads by increasing the speed to 1,000 r.p.m. However, this feature is not intended for frequent use and is only obtained by manually operating the controller. The two-axle construction is somewhat unusual with the electric transmission, although a number of mechanical transmission locomotives of this type have been built abroad.

Cooling System Designed for Variety of Conditions

The cooling system is also a departure from that usually found in locomotives of this size intended for switching service in that forced ventilation for the radiators is not provided. Ten sections of tubular radiators are located on the roof, five on each side. An additional or auxiliary system has also been provided in the form of a vertical tubular cooling tank or boiler located at the rear end of the cab which is carried on brackets cast integral with the main frame. The total capacity of the cooling system, including the expansion tank on the roof, is approximately 490 gal. This does not include the water in the engine cooling jackets. To induce more rapid air circulation through the tubes of the cooling tank, the engine exhaust pipe is carried into what might be termed a vacuum chamber over the cooling tank and terminates in a manifold. The venturi effect of this arrangement should, when the engine is running at full speed, considerably improve the effectiveness of the cooler. This construction is also expected to muffle the exhaust noise, but an addition muffler has also been provided.

The cooling tank is located below the roof radiators and the piping has been so arranged that several cooling or circulating schemes are available; for example, the



End Elevation Showing the Arrangement of the Engineman's Cab

roof radiators or the cooling tank may be used independently or together, or the roof radiators may be operated full of water at all times, or only when the engine is running at full speed, in which case, when the engine is slowed down or stopped, all of the water automatically drains back into the cooling tank. This latter combination is expected to be of advantage during cold weather as the water temperature can be more easily kept above the freezing point due to reduction in air circulation through the cooler at low engine speeds. It will also be possible by a slight modification in the piping to reverse the flow of water in the radiators. Furthermore, when the engine is stopped for any length of time, the cooling water may be circulated through an Arcola hot water heater used to heat the operator's cab. This method of heating the water is possible with any of the various radiator hook-ups.

The Diesel Engines

The engine for these locomotives was designed by the Bessemer Gas Engine Company, Grove City, Pa., especially for this equipment and are rated at 500 hp. at 800 r.p.m., and approximately 90 lb. b.m.e.p. It is an eight-cylinder vee type engine with an included angle of 45 deg., operates on the four-cycle principle and has solid fuel injection. The cylinder bore is 8½ in., stroke 12 in. and forked connecting rods 26⅜ in. long are used, the cylinders being set directly opposite each other.

The engine is started by compressed air and as the normal main reservoir pressure is sufficient for this purpose, no special tanks have been provided, but cut-out cocks are installed to shut off the pressure from the balance of the brake equipment when the locomotive is to be laid up for several hours. As there are two main reservoirs, these cocks are arranged so that in case air should leak out, it is only necessary to charge one reservoir with the small auxiliary compressor, which is a single cylinder unit driven by a single cylinder gasoline engine.

The fuel for the engine is carried in a five-gallon tank located under the cab floor and suspended from the main frame.

Fuel for the Diesel engine is carried in three 85-gal. tanks located under the cab and is pumped from these tanks to a small day tank by an electric driven gear pump. Oil flows by gravity to the four high-pressure fuel pumps on the engine, which deliver it to the cylinders at 4,000-lb. pressure for 800 engine r.p.m. and 2,000-lb. pressure for 400 engine r.p.m. The three fuel storage tanks are connected in series and have a common filler located on the left side of the cab near the front end. An electric oil level gage or indicator is located on the main instrument board in front of the engineman. Other instruments located on the two panels in the front of the engineman are as follows: Two ammeters (one for each traction motor); one fuel pressure gage; one lubricating oil pressure gage; two air brake gages; one cooling water and one lubricating oil temperature indicator; one temperature indicator for the main generator commutator; one pressure gage for the air reservoir in the pneumatic switch control system, 70-lb. pressure being used in this line.

The master controller, which is the Westinghouse type No. 337-1, is located in front and to the left of the engineman and all other controls, lighting switches, etc., are within easy reach except the Pyrometer equipment, which is located in the engine-room.

The Transmission

The main generator is the Westinghouse d.c. railway type No. 476 rated at 330 kw. at 800 r.p.m. and 550-600 volts and is driven at engine speed. The auxiliary generator is rated 16 kw. at 400 r.p.m. and 100 volts and 20 kw. at 800 r.p.m. and 125 volts. The relatively high output of this generator at 400 r.p.m. is desired so that the auxiliary equipment, especially the air compressor, can be operated at nearly full capacity with the engine running at idling speed. To further improve this condition, the motor on the air compressor is designed for 115 volts instead of 125 volts, the rated voltage of the generator at full speed. The auxiliary fuel pump, main lighting circuits, electrically operated switches and battery charging circuit are all on this generator. A 6-volt battery is used for emergency lighting and ignition for the auxiliary air compressor engine.

The main traction motors are the Westinghouse railway type No. 355 rated 300 hp. each and are geared by a pinion on each end of the armature shaft to the flexible gears on the axle. The ratio of these pinions and gears is 16 to 76.

The Control

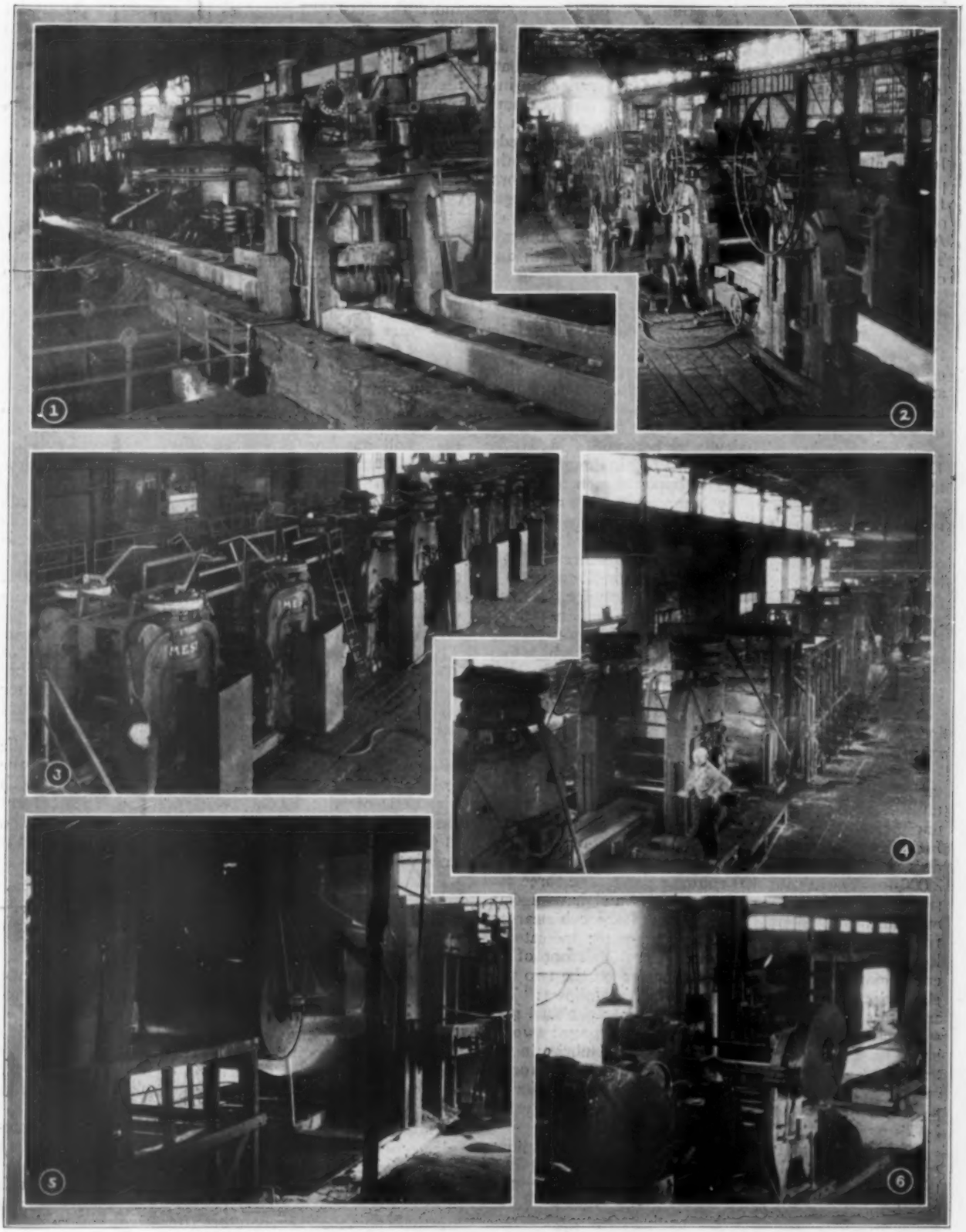
The control is of the electro-pneumatic type and functions as follows: The engine is started by compressed air stored in the main reservoirs of the brake system, the small gasoline driven auxiliary compressor being used to pump up these tanks if the pressure is too low to start the engine. With the master controller in the "off" position, the engine is governed at 400 r.p.m. and at that speed the auxiliary generator is generating sufficient voltage to operate the magnet of an electro-pneumatic valve controlling the air ram, which in turn controls the tension in the governor spring. As the first movement of the master controller drum closes the circuit of this magnet the governor spring tension is increased and the engine speed is brought up to 800 r.p.m. The voltage of the auxiliary generator is maintained at 100 to 125 volts with variations in engine speed between 400 and 800 r.p.m., by a vibrating regulator which introduces resistance in parallel with the shunt field resistance.

There are eight electro-pneumatic unit switches in the main motor circuit which are used only for reversing the locomotive. Four of these switches are used for each direction of the locomotive, reversing the current through the main motor fields. A master control switch is also provided in the motorman's compartment, the opening of which kills all control circuits.

Type of Air Brake Used

The Westinghouse Air Brake Company's type No. 14-EL air brake equipment is used on this locomotive, and on account of the short wheelbase and the fact that both traction motors are mounted between the axles, lack of space makes it necessary to use two brake cylinders, one on each side, mounted outside of the drivers. Two brake shoes are used on each wheel and the rigging is such that changing shoes should not be difficult; in fact, accessibility was given careful consideration in the design and location of all equipment to facilitate maintenance.

The cab has been so designed that it and the complete cooling system, except the cooling tank, may be lifted from the main frame as a unit without disturbing the engine or generator. At the same time a roof hatch of sufficient size has been provided to permit removal of the engine and generator after the roof radiators have been removed, without disturbing any other portion of the cab. This is a feature that is expected to be of considerable value at the time of overhauling the engine.



Six Stages in the Continuous Rolling of Sheets

(1) The Blooming Mill Where the Ingot Is Made Into a 4-in. by 36-in. Slab—(2) Rolling the Slab into Bar Plate—(3) The Jobbing Mill Where the Bar Plate is Reduced to 16-Gage Sheets—(4) Rolling the Lighter Gages, the Ingot is Now a 20-Gage Sheet—(5) The Ribbon of Sheets Entering the Continuous Annealing Furnace—(6) Duplicate Shears for Cutting Off the Stitching that Held the Sheets Together.

Iron and Steel Sheets Now Rolled by Continuous Process

IRON and steel sheets in widths up to 45 in. are now being rolled by a new process in which the movement of the material in all stages of the operation is entirely mechanical. This development has come after years of experimentation and many expensive failures, for in spite of the marked success that has attended the application of mechanical processes to the manufacture of iron and steel, the rolling of sheets has until this time entailed the employment of highly skilled operatives whose dexterity in the handling of the sheet after each pass of the rolls has been a basic requirement of the industry.

The railroads are large users of sheets for the construction of buildings, cars and locomotives, and for the making of culvert pipe, containers and various utensils, and it is of direct interest to them that the new process is a continuous one for which the manufacturer claims the advantage of better control of temperature, thereby greatly facilitating the attainment of more uniform gage, better surface and greater uniformity and better quality of the metal.

Could Not Control the Sheets

The stumbling block in the elimination of hand labor in the rolling of wide sheets was the inability to develop mechanical means that would insure the travel of the sheet through the rolls and from one stand of rolls to another in a straight line. The side guides on roller tables which play an important part in rolling thick, bulky work such as rails, have proved entirely ineffective in controlling the movement of anything as flexible as a thin, wide sheet.

Consequently the problem remained unsolved until extended research by the American Rolling Mill Company of Middletown, Ohio, led to the discovery of a solution. The investigation was extended along many lines but it was as a result of extremely accurate measurements of the rolls as deformed under conditions of load and temperature that the problem was solved, namely, that the most effective control of the movement of the piece is obtained when the cross section of the piece is different from the outline of the space between the rolls during its passage between them.

In applying this priciple to the rolling of wide sheets, the rolls are given a shape such that the sheets have a slight convexity i.e., they were made thicker along the longitudinal center line than at the edges. This convexity is greatest in the first stand of sheet rolls, roughly five per cent of the thickness, and is reduced in each succeeding pass so that the sheet is truly flat after the last pass.

After practical experiments for the purpose of demonstrating the soundness of this theory, a continuous sheet mill was built at the company's Ashland, Ky., plant, which is now rolling sheets at the rate of as much as 24,000 tons per month. The process as carried out at Ashland is briefly as follows:

Five-ton ingots are converted into slabs 4 in. thick, 36 in. wide and 23 ft. long by a blooming mill and pass into a holding furnace. Emerging from this furnace the slab is cut into lengths equal to the desired width of sheet by a shear. After being turned through 90 deg. on a skew table the slabs are passed through a bar mill of seven stands which reduces them to bar plate having a thickness averaging 3/8 in.

From this mill the bars are moved forward through a 30-ft. furnace and thence to a shear which cuts off pieces of the required size for the making of single sheets in what is known as a jobbing mill. This mill consists of seven stands and reduces the bar plate to sheets of No. 16 gage or thicker. It therefore completes the rolling process for the thicker gages but it also produces the so-called rough plate which is in turn reduced to the thinner gages of sheets in the sheet mill.

From the time that the ingot is delivered to the blooming mill until the sheet passes through the last stand of rolls of the jobbing mill, the entire operation is a progressive mechanical process in which all movement is on power-operated roller tables. But as much of the output of the jobbing mill is a commercial product, adequate space must be provided between the jobbing mill and the sheet mill for sorting, shearing and further processing, the rough plate being delivered to the sheet mill by traveling cranes.

Here the rough plates pass through a continuous heating furnace 140 ft. long, is sheared to suitable lengths and passed through seven roll stands which reduce the material to a minimum of No. 20 gage. Furnaces interposed in advance of the second, third and fourth roll stands maintain the sheets at uniform temperatures until the rolling is completed.

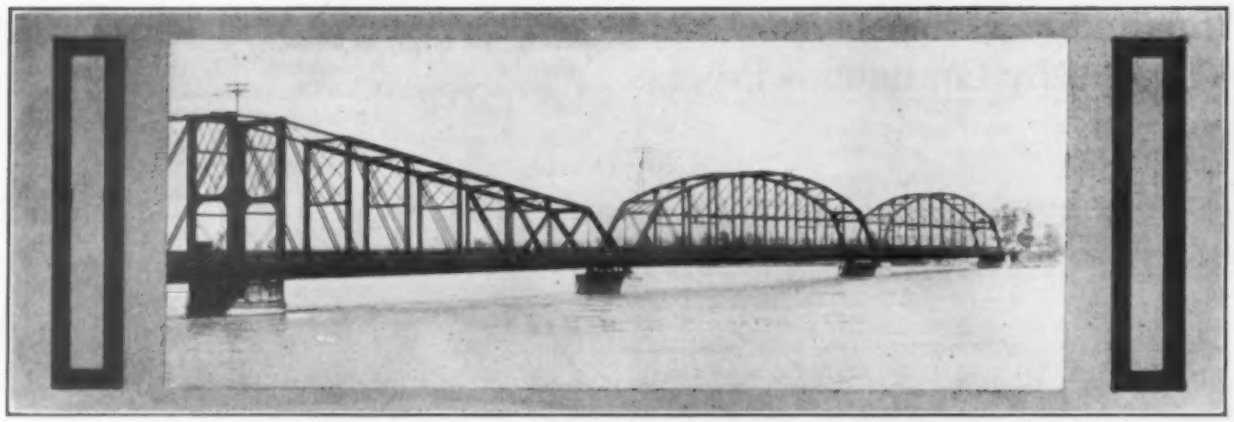
A further refinement of the operation with respect to the production of this mill is the subsequent annealing, cooling and pickling of the sheets. After the sheets have been sheared to size they are stitched together in long continuous ribbons by a special multiple punching and clinching machine. As a consequence the progressive movement of this ribbon of sheets at a carefully regulated speed through the annealing furnace, cooling chamber and pickling vats, insures a uniformity of treatment for all the sheets.

Freight Commodity Statistics

WASHINGTON, D. C.

THE Interstate Commerce Commission's Bureau of Statistics has issued its annual compilation of freight commodity statistics giving the figures for the Class I roads, as a whole, by districts and regions, and by individual roads. The report also includes the following summary of tons originated and tons carried comparing the principal groups of commodities for the years from 1920 to 1926:

Groups of Commodities	Year ended Dec. 31, 1926	Year ended Dec. 31, 1925	Year ended Dec. 31, 1924	Year ended Dec. 31, 1923	Year ended Dec. 31, 1922	Year ended Dec. 31, 1921	Year ended Dec. 31, 1920
	Number of tons originated						
Products of agriculture	111,787,179	109,313,068	116,586,794	109,317,655	111,787,032	114,068,706	110,839,554
Animals and products	26,244,068	26,323,842	27,747,010	28,254,446	26,230,230	24,263,008	26,594,856
Products of mines	758,064,458	678,336,071	637,582,265	713,734,824	532,997,597	511,270,449	712,154,458
Products of forests	104,858,549	107,391,084	108,094,065	115,617,993	89,059,248	76,419,241	100,765,537
Manufactures and miscellaneous	296,075,910	285,290,606	256,736,587	267,766,748	220,441,687	172,169,145	251,864,290
All l. c. l. freight	39,497,628	40,586,944	40,549,023	44,338,556	43,229,213	41,992,011	53,202,296
Total	1,336,527,792	1,247,241,615	1,187,295,744	1,279,030,222	1,023,745,007	940,182,560	1,255,420,991
	Number of tons carried						
Products of agriculture	222,428,819	215,124,520	230,851,877	220,489,536	220,660,207	222,678,348	220,049,724
Animals and products	46,824,330	46,314,799	48,521,368	48,873,197	44,838,913	41,777,754	44,853,503
Products of mines	1,338,093,897	1,212,013,894	1,114,637,140	1,250,245,258	912,438,354	878,224,636	1,209,097,673
Products of forests	201,670,174	210,076,838	209,359,687	222,561,537	171,239,150	148,042,825	195,579,878
Manufactures and miscellaneous	575,472,495	552,543,934	500,275,846	517,845,804	421,829,412	332,991,002	494,556,078
All l. c. l. freight	68,296,686	68,200,761	68,072,787	73,585,432	69,948,534	67,048,130	89,901,495
Total	2,452,786,401	2,304,274,746	2,171,718,705	2,333,600,764	1,840,954,570	1,690,762,695	2,259,983,278



The Chicago Great Western Bridge Over the Missouri River at Leavenworth, Kan.

Use Electric Welding Process to Strengthen Bridge

Chicago Great Western avoids drilling and riveting in increasing capacity of Leavenworth bridge

WHAT is believed to be the first application of electric welding in the reinforcing of a bridge was carried out during the early part of the present year when the superstructure of the Chicago Great Western's bridge over the Missouri river at Leavenworth, Kan., was strengthened by adding cover plates to certain members. This bridge is owned by the Leavenworth Terminal & Railway Bridge Company, a subsidiary of the Great Western, and comprises an important link in the Southern division of that road which extends from Oelwein, Iowa, to Kansas City, Mo.

The bridge was built in 1893, according to a design of the late George S. Morrison and consists of two fixed through truss spans 330 ft. long and a through truss swing span 440 ft. long. The workmanship on the superstructure was good and it has been maintained in excellent condition, but owing to the extremely low live loading and the comparatively high stresses used in the design, the spans have a limited load-carrying capacity. The spans were designed for a live load of 3,000 lb. per ft. of bridge without any wheel concentration or other allowance for greater weight of locomotive than the following train. The working stresses used in design conformed to a tensile strength of 10,000 lb. per sq. in. for live load and 20,000 lb. per sq. in. for dead load. The main truss members are steel and the floor and lateral system and cross bracing of wrought iron. It is not surprising, therefore, that it was necessary to restrict this bridge to comparatively light locomotives.

For passenger service use of the bridge has been confined to a Pacific type locomotive having a total weight including the tender of 329,280 lb. with 46,400 lb. on each of three driver axles. For freight service power was restricted to a prairie type locomotive having a total weight of 321,480 lb. with 48,250 lb. on each of three driver axles.

Freight train tonnages based on the rating of the prairie type locomotive, single-headed, placed such limitations on any plans for increased operating economies that it was clear that something had to be done to permit the use of heavier power. Studies were made for a new superstructure for the bridge but the cost of this was such that the project was abandoned. A careful analysis of the old spans was also carried out with a view to ascertaining whether it would be practicable to strengthen the bridge so as to permit of the safe operation of a consolidation locomotive having a total weight of 379,500 lb. with 50,550 lb. on each of four driver axles and followed by a uniform load of 4,000 lb. per ft. of bridge, using the rules for the investigation of old bridges of the American Railway Engineering Association.

This investigation showed that no reinforcing of the draw span trusses was required but that it would be necessary to strengthen the floor beams and stringers of the entire bridge and the end posts, top chords, hip verticals and counters L_3 U_4 of the two fixed spans. The failure to apply concentrated locomotive loading in the design readily explains the weakness of the floor system and the hanger verticals, but the need for reinforcement of the end posts and top chords is to be accounted for in part by the faulty make-up of these members. They consist of two webs 22 in. deep with four 5-in. by 3½-in. angles and a cover plate 27½ in. wide by ⅜ in. thick. Therefore, with rivet lines in the cover plates 24½ in. apart and a thickness of only ⅜ in., these cover plates had a slenderness ratio of 1 to 64, whereas good practice limits this to about 1 to 40.

It was found that the chord members of the trusses could be reinforced by adding a second cover plate, and that additional or new members would be required for the hip verticals and the inadequate counters, while additional metal would be required in the flanges of the floor beams and stringers.

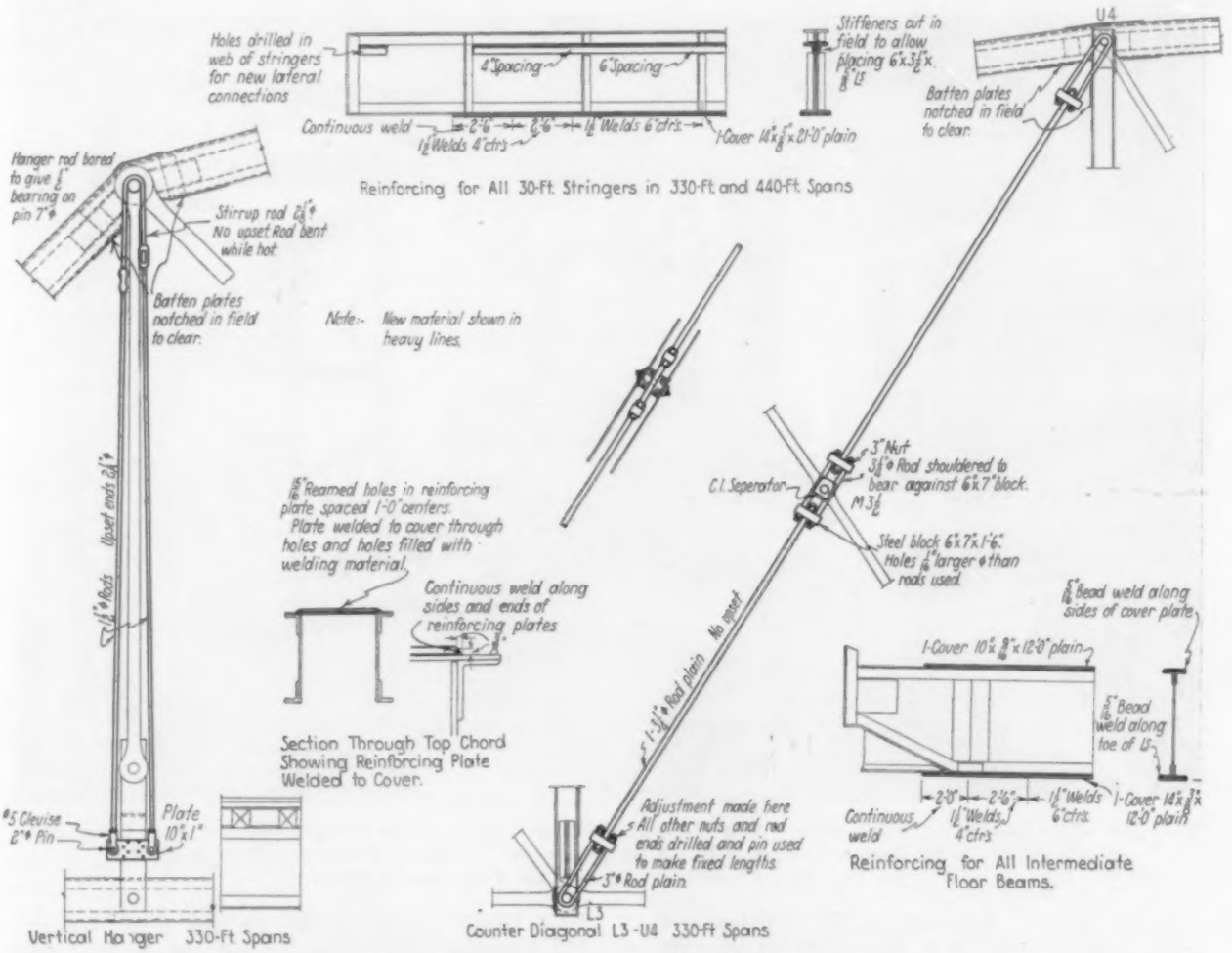
Bridge Company Submits Plan for Electric Welding

A request for bids on the reinforcement work resulted in tenders covering the usual method of applying rein-

forcing materials as well as one in which all cover plates were to be welded in place. The latter bid was so much more favorable that after careful study it was accepted and the work carried out substantially in accordance with the submission made. The strengthening of the hip verticals was carried out by adding two rods 1½-in. in diameter attached at the top to a U-bar over the hip pins and at the bottom to plates riveted to the ends of the floor beams. The counters L_2 U_4 were replaced by new members consisting of a 3¼-in. rod attached at the ends to U-bars over the pins and carried around the sub-panel points M 3½ by short rods and yokes as shown. This part of the work involves no departure from current practice. The same comment applies to the electric welding. This included 20-in. by ½-in. plates on the end posts and top chords of the two 330-ft. spans, a 10-in. by 9/16-in. cover plate for the top flange and a 14-in. by ⅜-in. cover plate for the bottom flange of the floor beams and a 14-in. by ⅝-in. cover plate for the bottom flanges of the stringers. The use of cover plates on the top flanges of the stringers was avoided because this would have made it necessary to remove the decking while the work was in progress.

Welding of Cover Plates

All of these cover plates were secured in place by bead welding along the edges. On the chord members these welds were continuous. On the floor beams the weld



Details of the Reinforcing of the Truss and Floor Members

reinforcing of the top flanges of the stringers which were increased in section by riveting new 3½-in. by 6 in. by ⅝-in. angles on each side of the web just below the bottom edges of the original flange angles, the stiffener angles being notched out to make room for the new steel. As the old laterals attached to the top flanges of the stringers were made of rods, they were replaced by new 3½-in. by 3½-in. by ⅜-in. angle laterals attached to the new flange angles.

New Cover Plates Welded in Place

Substantially, all other reinforcing of the bridge consisted of cover plates which were secured in place by was continuous for 2 ft. from the ends and on the stringers for 2 ft. 6 in. from the ends, with welds 1½ in. long at spacings ranging from 4 in. to 6 in. center to center for the remaining length of these plates. In addition to the bead welding, the cover plates on the chords were stitch welded along the longitudinal center line through 15/16-in. holes punched and reamed in these plates at a spacing of 12 in. center to center.

The welding was done without interruption to train service, but was discontinued while trains were crossing the bridge. To insure that the new material would be subjected to live load stress, the plates were welded at each end first. That this proved effective was clearly

shown, for in the case of the plates on compression chords or flanges the shortening of the members under live load caused the plates on which the welding had not been completed to buckle within the limits of the unattached portion.

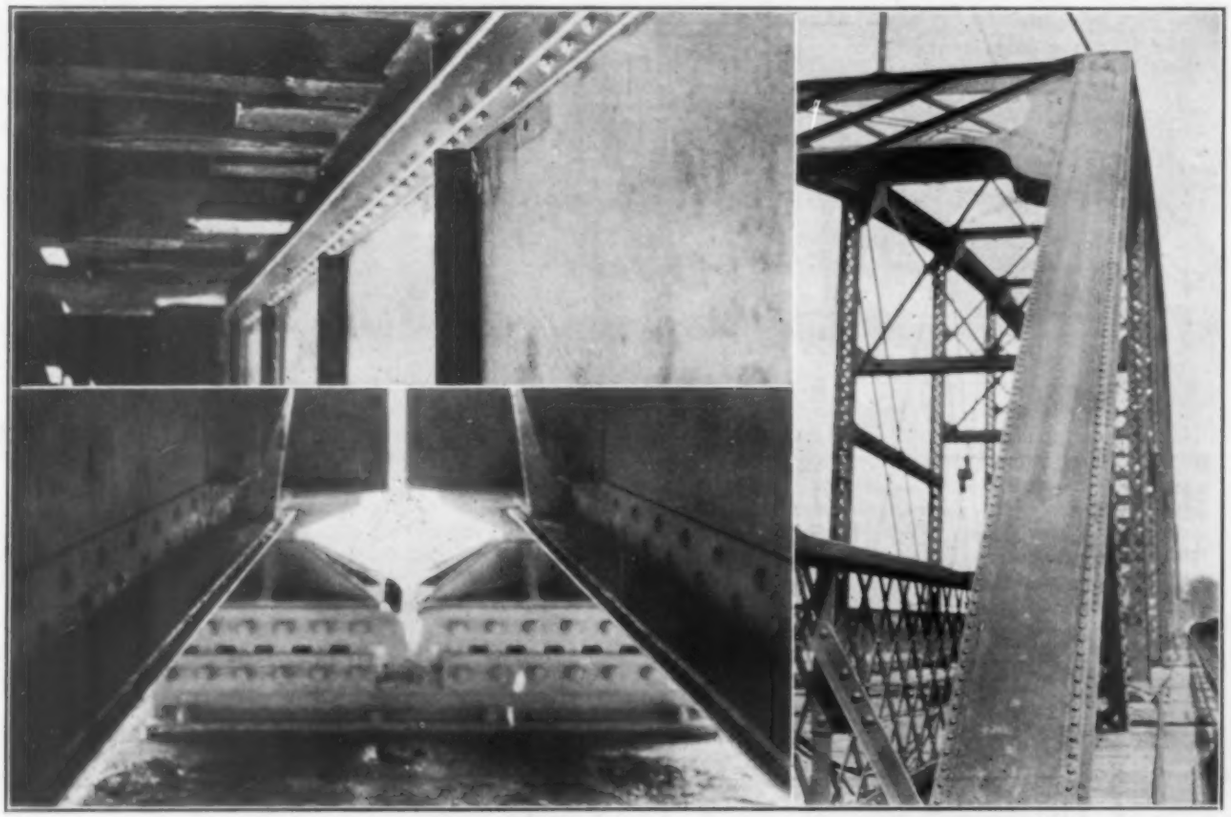
Clean Surfaces Before Placing New Plates

The surfaces of the old members were carefully cleaned of rust and paint before applying the new plates which were carefully clamped in position before commencing the welding. Three-eighth inch bead welds were made, using welding material having a tensile strength of 50,000 to 60,000 lb. per sq. in. The welds were fused deeply into the base metal. Tests of field welds all resulted in failure outside of the welds.

ing machines were used, of which two were 350-400 amp. capacity, alternating current welding machines made by the Electric Arc Cutting & Welding Company, while the other two were single operator direct-current arc welding outfits made by the Westinghouse Electric & Manufacturing Company. Current was available at the bridge site at 60-cycle, 3-phase, 220-volts. The weight of the new structural steel installed is as follows:

Cover plates all welded in place	104,340 lb.
Flange angles riveted in place	82,728 lb.
Loop rods	24,275 lb.
Miscellaneous parts	13,443 lb.
Total	224,786 lb.

About 7500 lin. ft. of weld was made for which 1950 lb. of welding steel was used. The work was done under the direction of C. G. Delo, chief engineer, and W. R. Roof, bridge engineer of the Chicago Great Western. The American Bridge Company developed detailed plans and methods for carrying out the work and supplied all new material and installed it on the structure, Otto Schultz, being foreman for the American Bridge Company, in charge at the bridge.



Examples of the Reinforcing Work—Above, One of the New Flange Angles on the Stringers—Below, New Cover Plates Stitch-Welded to the Bottom Flanges of End Floor Beams—At the Right, Reinforcing Plate Welded to the End Port Cover Plate Between the Two Lines of Rivets

As this was the first work of its kind, few welders were available who were accustomed to working on bridges. Consequently, a considerably greater number of welders were employed for various lengths of service than would normally be the case. Experience also showed that there was a considerable difference in the ability of the welders when employed under the conditions imposed on the bridge. For example, one man who had proved unusually expert under shop conditions, was entirely unsuccessful on this work, primarily because of inability to accustom himself to working in high places and on work that was subject to vibration. However, some of the welders proved especially proficient and completed from 80 to 200 ft. of welds per day, depending upon how continuously they could be employed under existing circumstances. An average of 20 men were engaged on the work, which was started on February 25 and completed on April 28. Four weld-

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WELDING SOCIETY TO GIVE MEDAL.—The American Welding Society, through its president, F. M. Farmer, announces that a gold medal, the gift of Samuel Wylie Miller, is to be awarded by the society annually in appreciation of work of outstanding merit in advancing the art and science of welding. It will be known as the Miller medal. Mr. Miller has been one of the outstanding figures in the advancement of welding ever since its commercial inception. He is a past-president of the American Welding Society and member of other scientific and engineering organizations. He is consulting engineer of the Union Carbide & Carbon Research Laboratories.

R. A. O. A. Meets at Denver

Discussion of cost accounting and revision of I. C. C. accounting classifications leading feature of extended program

THAT the postponement from January 1, 1928, to January 1, 1929, of the effective date of the Interstate Commerce Commission's order with reference to depreciation accounting would also result in a postponement of the effective date of the proposed revision of the I. C. C. accounting classifications was announced in a letter from Commissioner Joseph B. Eastman addressed to the Railway Accounting Officers' Association assembled for its 39th annual meeting at the Hotel Cosmopolitan, Denver, Colo., June 7 to 11.

As at the Quebec meeting a year ago the pending revision of the accounting classifications was the leading subject of discussion. Second to it in interest were the extended recommendations of the Committee on Disbursement Accounts relative to material accounting and to methods for the comparison of stores balances. Several representatives of A. R. A., Division VI—Purchases and Stores, were in attendance and there was much evidence of a strong desire to attain co-operation as between the two associations.

A new angle of the discussion relative to the revised accounting classifications was consideration given to the subject of cost accounting. When the Interstate Commerce Commission made public its tentative revisions of the classifications some months ago it sent copies to interested parties and asked for criticisms and suggestions. Apparently these have been received in considerable volume. The commission has received comments regarding the classifications from various state commissions, from the National Association of Railway and Public Utility Commissioners, from the Railway Car Institute, an organization of representatives of the car manufacturers, from the organization of the traveling salesmen, from various shippers' organizations and from individuals. It appears also that numerous suggestions have been made to the effect that the classifications should pay greater attention to cost accounting or cost finding.

G. E. Bissonnet

Attitude on Cost Accounting

The commission is understood to be considering holding public hearings so that all interests may be heard, but has not yet committed itself on that point. The accounting officers thus far in the discussion, although they have been in closest touch, through their general accounts committee and subcommittees, with the commission's representatives engaged in the work of revising the classifications, have not put themselves on record with reference to the suggestions regarding cost accounting. It was plainly in evidence at the Denver meeting that the accounting officers do not think much of cost accounting, as was pointed out particularly in the president's address. The commission's representatives at the meeting made rather plain, however, their opinion that an issue had been presented in cost accounting which both the commission and the accounting officers would have to meet.

Attendance

The attendance at the meeting included 274 members of the Association or slightly less than one-fourth the total membership. Visitors and guests brought the total attendance up to 600. An elaborate program of entertainment was provided, including several sight-seeing trips and a concert given in the Denver Auditorium by the Denver & Rio Grande Western shop band and the Union Pacific Male Chorus, the latter brought on from Omaha for the occasion.

The association was welcomed to Denver by Benjamin Stapleton, Mayor of the City, and to Colorado by Ralph Lindstrum, representing Governor W. H. Adams. An additional interesting feature of the opening session was an address by N. H. Loomis, general solicitor of the Union Pacific.

President in Chair

The presiding officer at the business sessions was the president of the association, G. E. Bissonnet, general auditor of the Union Pacific. In his president's address, Mr. Bissonnet reviewed the work of the association during the past year. He explained briefly the manner in which the organization's work is carried on. Following this he presented a particularly detailed discussion of the activity of the association with reference to its co-operation with the Interstate Commerce Commission in the revision of the accounting classifications. Of special interest were his extended comments on cost accounting.

Mr. Bissonnet's address follows practically in full:

President's Address Discusses Cost Accounting

In order that the vast volume of work to be done by this association may be accomplished with dispatch, the work is assigned to committees which are provided for in the constitution; and which are composed of men well experienced in the class of work to be undertaken. Thus the work of this association is co-ordinated in the same manner as the accounting work is co-ordinated on a Class I railroad. The duties of the committee on general accounts may well be compared with the duties of the chief accounting officer and the staff handling general, corporate and fiscal matters. The committee on disbursements, with the auditor of disbursements, the committee on freight accounts with the auditor of freight accounts, and the committee on passenger accounts with the auditor of passenger accounts. The work of the other committees is likewise fully co-ordinated under the plan.

The business to come before this convention is embodied in an agenda classified as to subjects and formulated in reports of each of the committees I have mentioned. The agenda was distributed by the secretary to the membership on April 25, 1927. In this way each member has been placed in a position to inform himself fully concerning the business to come before this convention, and the action of the committee on any subject. Each member is urged to take the floor promptly to seek further information on any subject not fully understood, or to challenge any ruling made by any committee if he does not agree with the committee's action, and when discussion is concluded, to vote promptly an approval of the report when there are no sound objections, or to vote negative when there are sound objections. In this way only may we hope to obtain the best results in the solution of the problems which come before us. When the vote is accomplished it is the voice of the association speaking and not the voice of a committee. The agenda which is before this meeting contains approximately 361 pages of data forming the reports of the committees, and it shows conclusively that your committees have not been idle during the past year.

Co-operation with I. C. C.

I am very grateful to the Interstate Commerce Commission for the invitation extended to this association to have its representatives work with the representatives of the commission in the revision of the commission's accounting classifications, because I am not unmindful of the fact that the commission has full power and authority under the law to revise and prescribe such classifications without reference to anybody. In the spirit of fairness which the commission has always shown, before acting on the matter, it has granted the railway accounting officers the privilege of expressing their views on this important subject. The commission's representatives, Alexander Wylie, director of the Bureau of Accounts, Seely Dunn, assistant director of the Bureau of Statistics, A. M. Bunten, chief of the Depreciation Section, Bureau of Accounts, and Fred A. Barnes, assistant director, Bureau of Accounts, co-operated with our committee most harmoniously. Our representatives were given every opportunity to express the railroad point of view in these matters. Of course, there were differences of opinion, and the commission has seen fit to reject some of the suggestions offered by our representatives.

A revision of the six accounting classifications was again started with the commission's representatives on July 15, 1926; the detail work in behalf of the association was handled by a special committee appointed by me to work on the details with the representatives of the Interstate Commerce Commission. The members of this special committee are:

J. J. Ekin, comptroller of the Baltimore & Ohio, chairman, assisted by O. J. Rider, general accountant of the same road.

W. B. McKinstry, comptroller of the Central of Georgia, assisted by M. B. Nichols, auditor of disbursements of the same road.

W. E. Eppler, comptroller of the Delaware & Hudson, assisted by A. V. Vallandingham, auditor capital accounts of the same road.

John Hurst, comptroller of the Pennsylvania System, and H. A. Toland, auditor of the Union Pacific, who acted throughout the conferences for me.

I desire to thank these gentlemen for the time devoted to this task, and to compliment them on the painstaking and thorough manner in which it was handled, and, in this connection, it gives me much pleasure to quote from a letter dated September 18, 1926, addressed to me by Alexander Wylie, director, Bureau of Accounts, Interstate Commerce Commission:

"I hand you herewith copies of tentative classifications as follows:

"Income.
"Operating revenuess.
"Operating expenses.
"Income.
"Profit and loss.
"General balance sheet.

"In these tentative classifications many helpful suggestions and recommendations of the committee appointed by you to co-operate with the Commission with respect to the revision of the classifications have been included; this committee has devoted much attention to this work, and I cannot speak too highly of the progress made and the benefits which have accrued through its co-operation. During the progress of the work, the committee has from time to time made recommendations which it has seemed desirable to preserve for further consideration. . . . In line with the plan which we have had in mind, I presume that these classifications will now be given consideration by the committee on general accounts; it is extremely desirable that this work by that committee shall be taken up as promptly as practicable and carried to completion . . ."

Complications from Depreciation Order

Copies of these tentative classifications were distributed immediately to the 25 members of the committee on general accounts, and this committee met at Washington, D. C., on October 13, 14 and 15, with representatives of the Interstate Commerce Commission, and did jointly review such tentative classifications. Before further action could be taken the commission issued its Order 15100 of November 2, 1926, relating to depreciation on buildings, bridges and other fixed property, which brings many new factors into the accounting problem, and which required the special committee and the commission's representatives to review all of the work previously accomplished, with the result that under date of April 25, 1927, Mr. Wylie submitted for consideration by the committee on general accounts another revision of the several classifications. This latest draft of the revised classifications and the final report dated April 23, 1927, of the efforts of the special committee, are now before the committee on general accounts, who have not had sufficient time to give full consideration to all of the recommendations of the special committee nor to the final revision of the classifications as submitted, although the committee did review at its April 26 to 27 meeting certain suggestions offered by Mr. Wylie. In a subsequent order the commission postponed the effective date of the depreciation order to January 1, 1929, and it is quite doubtful if the revised classifications will be made effective before that date. In fact, on account of this postponement, I feel that the association will be asked again to work with the commission's representatives in revising the classifications just as soon as the matter of depreciation on fixed improvements is definitely settled, and I am sure the then president will cheerfully respond to the call.

Classification of Investment in Road and Equipment

In connection with the existing classifications of road and equipment and operating expenses and the revision thereof, I desire to offer the following observations:

1st. In regard to the classification of investment in road and equipment: Some of our members seem to be of the opinion that a classification comprising but three accounts, i. e., Road, Equipment, and Investment Suspense, with the option to carriers to further sub-divide such accounts to meet their own requirements, would be sufficient, but to my mind such a classification does not go far enough. In my opinion, a classification in about the form proposed by the commission with the option to carriers to further sub-divide any accounts for its own use is decidedly more comprehensive and desirable. Railroad physical property is of such a nature or character that when so described and set out, the capital expenditures of one railroad can be compared or consolidated with the capital expenditures of another railroad. It seems to me to be quite desirable to maintain uniformity in accounting when practicable; it appears to be entirely practicable in this case. The public should be kept fully informed of the capital expenditures required of railroads to meet the demands of its transportation operations. If a reasonable classification is adopted we can tell the public briefly and comprehensively, the character of the property or improvements installed and their cost without an expensive rearrangement of the expenditures charged to each account. There is a certain relation between fixed property and equipment and the cost of maintaining such property, and it seems to me that this relationship should be retained in the classification of road and equipment and the classification of maintenance expenses.

Harris & Ewing

E. H. Kemper

Underwood & Underwood

H. W. Johnson

E. R. Woodson

Classification of Operating Expenses

2nd. In regard to the Classification of Operating Expenses: Active discussion of this problem began with a letter written by Commissioner Eastman on June 10, 1919, in reply to an invitation to attend the Thirty-first annual meeting of the association, and a letter written June 2, 1919, by Alexander Wylie to A. H. Plant, chairman of the committee on general accounts. In the increasingly active discussion of this subject during the past six or seven years, many radically divergent views have been expressed, some persons have advocated a departmental arrangement of the expenses or primary accounts, or a very considerable consolidation of the primary accounts; others, including a number of statisticians, have strongly advocated what they term "cost accounting." I have been, and am definitely and strongly convinced that any of the plans proposed, in-so-far as I have been able to understand them, will result in the loss without compensating advantages of very valuable elements in our accounts and statistics, which are secured under the present classification.

No Radical Change Necessary

If we look backwards for a number of years we will find practically the same character of expenses incurred in operating the railroads as are present to this day. The bulk of the expenses appear in the cost of labor and the cost of material and supplies. Of the latter, the bulk of the cost may be found in fuel, lumber, ties, rails and fittings, station supplies, train supplies, and metal for locomotives and car repairs. Therefore, if such elements or articles have not changed in character and their costs are now and have been in the past properly recorded and exhibited by the present primary operating expense accounts, why is there any necessity for making a radical change in the recording and exhibiting of such expense? Mature consideration of all of the problems involved has convinced me of the fallacy of any attempt to compare in detail on a cost basis, efficiency of operation of one railroad with another railroad, or one unit of transportation service with another unit, and that the present classification permits and facilitates comparisons of operating cost of a railroad as a whole and of the operating divisions thereof from one month to another, with the same period of the previous year. This, in my judgment, is the only way in which an operating officer can use accounting statistics to determine his operating efficiency, indicate where economies should be effected, and determine policies. In the use of such statistics, it must be borne in mind that conditions are seldom, if ever, exactly alike on all divisions, or exactly normal on all divisions of a railroad. Identical cost data measured by the identical statistical unit on different divisions of the same railroad will frequently show different average costs, and yet the higher average cost may result from the most efficient operation, the differences being due, of course, to the different operating conditions of the different divisions.

What Is Meant by "Cost Accounting"?

Now, as to those who contend that the present classification does not record the expenses in sufficient detail to permit of cost accounting: I freely admit that I do not fully comprehend how they propose to apply whatever plan they have in mind, or just what they mean by

"cost accounting." I have not heard of, nor have I read any article setting forth a comprehensive or co-ordinated plan for cost accounting which would show clearly what the author had in mind, both as to the method of procedure and the end to be attained. Many of the advocates of cost accounting appear to have rather indefinitely formulated the view that costs of unit operations of a railroad can be ascertained by the application of methods which have been worked out for ascertaining the costs of unit operations of manufacturing plants. However, careful consideration of this view immediately discloses vast differences in conditions which to my mind utterly destroy any comparison of the two problems. In the manufacturing plant, costs are localized and can be definitely assigned to particular units to a very great extent. On a railroad, to take even the two major activities, the conduct of freight and of passenger transportation, a very large proportion of the operating expenses is incurred in the maintenance and operation of facilities used in common by both services, as well as other services, and it is impossible to say with definite authority what proportion of such expenses is caused by either of the respective services. Each step in further segregation adds to the expenditures which must be divided on the basis of some arbitrary assumption, giving a result of no more value than the assumption itself; and, if we attempt to measure costs for the line as a whole on a service basis or some theoretical statistical unit basis, we would be led into algebraic equations and complex arithmetical problems, which if followed, would lead us to unnecessarily expensive and misleading results.

197 Primary Accounts

Furthermore, those who advocate cost accounting should be reminded that the carriers record their operating expenses in eight different groups and 197 primary accounts, as follows:

1.	Maintenance of way and structure	79	Primary Accounts
2.	Maintenance of equipment	37	" "
3.	Traffic	9	" "
4.	Transportation, rail lines	50	" "
5.	Transportation, water lines	3	" "
6.	Miscellaneous operations	6	" "
7.	General expenses	12	" "
8.	Transportation for investment, credit	1	" "

That the train, locomotive and car miles are recorded in considerable detail, and that such mileage is separated between freight service and passenger service, that tons of freight carried and the ton mileage, passengers carried, and passengers carried one mile, are also recorded together with the full detail of the revenues; the expenses are further separated between freight service and passenger service, etc., etc.

Railroads Already Make Cost Studies

All of these details afford the general statistician as clear a view of the railroads' operations as a long distance survey permits, but I assert, without the slightest fear of successful contradiction, that there is not one railroad in the United States which does not make its own way, in respect to its own peculiar problems relating to maintenance of way cost, maintenance of equipment cost, traffic expenses, transportation expenses, cost of miscellaneous operations and general expenses. These studies are based on the same revenues and the same cost or expense, the same mileages, etc., as reported under oath to the Interstate Commerce Commission, and as required by their effective classifications and orders. For the purpose of additional or further studies for use in effecting economies, which are of value only to the executive and the operating officers responsible for the expense, the cost of labor and the cost of material are reported separately by a number of railroads by operating divisions only. As a rule, the separation of labor and material expense of operating divisions is the only segregation of labor and material required, a separation showing the labor and material costs of the overhead or general expenses for the line as a whole and the distribution of such overhead to operating divisions I regard as of no particular value, although some roads do make such separations and apportionments, perhaps feeling that they may find a remedy for effecting economy. However, such expenses are subject to direct control by the executive officer under the plan.

Has Had Attention of Accounting Officers

This very important question of cost accounting is one which has had the attention of railway accounting officers, to my knowledge, throughout the period of time which this association has been in existence. If one will devote the time to delve into proceedings, not only of our annual conventions, but of the committees, they will find records of many such discussions, and much of our progress has been built upon these discussions. We must never overlook the fact that the railroad handling both freight and passenger service with the same fixed property, locomotives and track, is operated in the conduct of transportation as a whole, that the attempt to separate out any particular feature of operation and determine its cost, while being helpful and perhaps enlightening to the management of a railroad, and those

The Delegates and

making a thorough and specific study of such a question, will give results which may be grossly misleading to others; and that the possibility of misuse of such results is obvious.

Operating Expense Classification

I believe that the views of our membership and the attitude of our association in respect to the revision of the operating expense classification is very well expressed by a resolution adopted by the committee on general accounts at a meeting held January 15 to 17, 1924, which I quote in part as follows:

"That the present requirements of efficient and economical railroad operations do not require an entirely new set of accounting classifications, and that any revisions or changes contemplated by the Interstate Commerce Commission, in its present accounting rules, should be made by amendments or changes in the present accounting classifications, and should be limited to the necessary requirements of the Transportation Act, 1920, and to a consolidation, clarification or amplification of the present operating primary accounts within the general accounts. . . . If after consideration of the foregoing statement, the commission still feels that new accounting classifications are necessary and should be prescribed, this committee will give its fullest co-operation to the accomplishment of this purpose."

I do not hesitate to state that in 1924 I voted for the resolution just quoted and both before and since that time I have consistently and vigorously opposed any radical change in the present operating expense classification, because, as previously indicated, it is my personal view that the primary accounts provided for in the present operating expense classification are complete and comprehensive and provide for recording the facts, thereby exhibiting reliable costs and comparisons, which enable the management to effect economies, control inefficiencies and determine policies.

Speaking for myself alone, I do not believe that the classification needs any revision, except to incorporate provisions for certain costs which are now excluded from, but which properly belong in operating expenses, and possibly to make some minor consolidations of accounts which are of more or less importance.

Important Points Covered

While we do not positively know what line of thought will control the classification which will be finally adopted by the Interstate Commerce Commission, I am pleased to see that the classification as proposed by the special committee to the representatives of the commission, the greater part of which appears to meet the approval of such representatives, covers the more important points to which I have alluded.

To what I have said in the foregoing, however, there is one very important exception to which I desire to direct particular attention of our members. As a result of the commission's order, relating to depreciation on fixed property and as shown on page 37 of Bulletin No. 113 to the committee on general accounts, the draft of the operating expense classification as now tentatively proposed by the Interstate Commerce Commission includes some radical changes in the primary accounts. In fact, account 212, Ties; 214, Rails; 216, Other track materials; and 218, Ballast, will be entirely eliminated. In other words, the proposed depreciation plan will do great violence to the operating expense classification which has been recognized by both operating and accounting officers and by statisticians for a great many years.

Uniform Accounting Practices

My objection to radical changes in the existing classifications at this time should not be taken as opposing unification or amplification, or adoption of new accounting methods where such unification or new methods are improvements over the old.

There is yet a considerable field in which uniform accounting practices may be employed before we can boast that our accounting methods are completely uniform and fitted to our needs.

As pointed out time and time again by our committees and by others, there is a vast difference in the office accounting methods followed by the individual railroads in regard to accruing revenues, operating expenses and other income; in booking taxes and depreciation on rolling stock equipment; investment and material accounting; accounting for subsidiary operations, such as highway motor cars; agency accounting and relations with other railroads at stations, such as inter-road switching.

Must Come Soon

Somebody must sooner or later establish uniformity in these practices; will it be the Interstate Commerce Commission or the Railway Accounting Officers? The latter is decidedly my preference, and I believe is the preference of the commission, because the accounting officers are the best equipped to work out these problems. I have a feeling that if we do not work out these problems, the commission will finally prescribe the mandatory rules and establish such uniform accounting; we may then sing that old familiar song "Goodbye Forever" to the latitude we now enjoy for initiating new methods and making experiments.

Their Families

Commissioner Eastman Announces Desire to Make New Classifications Effective January 1, 1929

At the opening session the secretary read a letter from Joseph B. Eastman, member of the Interstate Commerce Commission in which Mr. Eastman pointed out the relationships between the depreciation order and the new accounting classifications. He stated that it would be desirable to have both effective at the same time and that the commission had concluded to work towards an effective date of January 1, 1929. He added that many organizations had asked to be heard with reference to the classifications and said that all interested parties must have full opportunity to express their views.

His letter follows:

Commissioner Eastman's Letter

In response to your request for comment on matters which in my judgment might be of interest to the association, there are, as you know, two subjects with which we are dealing which are of paramount importance from the accounting point of view. I refer to the revision of the accounting regulations for steam roads and to the commission's order in No. 15100, Depreciation Charges of Steam Railroad Companies. They are, of course, closely related.

Your committee on revision, since your last annual meeting has devoted a great deal of time and much labor to the tentative accounting rules and has very diligently co-operated with representatives of the bureaus of accounts, statistics, and valuation in the prepartion of tentative drafts of the classifications of investment in road and equipment, operating revenues, operating expenses, income, profit and loss, and general balance sheet accounts. We very much appreciate not only the quality and quantity of this co-operation but also the spirit in which it has been tendered.

As you know, the effective date of our order in No. 15100 has been advanced to January 1, 1929. The President's Conference Committee has signified its intention of applying to the commission for a reopening and rehearing of this docket.

I think that I realize as well as anyone, perhaps, the intricacy and difficulty of this matter of depreciation accounting, as well as its far-reaching ramifications. It is a matter on which haste may very well be made slowly, for not only the underlying theory but also all the details of its practical application merit most careful consideration. Obviously the adoption of such accounting by a new company and its adoption by companies which for many years have followed other methods present quite different problems. You may be assured that the petition of the President's Conference Committee, when it is received, will be given prompt and careful attention. There are other organizations, also, not connected with the railroads, that have manifested an interest in this matter and have expressed a desire for further consideration.

The revised classifications must of necessity conform with the requirements, as finally determined, of the depreciation order, and both should become effective at the same time. We have, therefore, concluded to work toward making the new classifications effective January 1, 1929.

At the time when we made public the tentative draft of the revised classification, we sent copies to all that we had reason to believe might be interested and extended a general invitation that we be given the benefit of comments and criticisms. The state commissions have individually and as a body, through general committees, devoted much time to the matter and have sent in many helpful suggestions and promise more. Many interesting communications have reached us from other sources. The interest in the subject seems, I am glad to say, to be growing. Certain shippers' organizations are working on the matter, and there have been various requests for a public hearing. Whether these will be granted remains yet to be determined. Clearly all interested parties must have full opportunity to express their views and to combat, if they so desire, the views of others, and the question is merely the best way from all points of view of affording this opportunity.

What the commission desires to promulgate, of course, is a classification of accounts which will impose no unnecessary and useless labor upon the carriers, but will at the same time make readily available, within practical limits, the information in regard to the operations of the carriers for which there is a real public need. And I include in this phrase the needs of the shippers, of investors, and of the carriers themselves. Manifestly, as in the case of depreciation accounting, the subject is complex and difficult, and we need all the light upon it that we can obtain in order that we may act both intelligently and wisely. We shall look forward to and count upon the continued co-operation of your association.

Report of Committee on General Accounts

The committee on general accounts, or committee of 25, reported on 15 subjects. The most important of these was the revision of the classifications, already mentioned. Others included the destruction of records, still under consideration; possible simplification of the wage statistics; the assignment of railway operating revenues and expenses to states; a proposed formula for use in the ascertainment of freight terminal costs, and the depreciation order. Its report included 25 pages of the Agenda in addition to which there was Bulletin No. 113, a 130-page 9 in. by 12 in. document which included the latest draft of the accounting classifications, the proposed formula suggested by the I. C. C. Bureau of Statistics for the ascertainment of terminal costs and the comments of the committee on these and other of the 16 subjects covered. This material, having been distributed to the members was, of course, not read and only such phases were discussed on the floor as the members brought into question.

The report was submitted by the chairman of the committee, H. W. Johnson, comptroller of the Chicago, Burlington & Quincy and second vice-president of the association.

Revision of I. C. C. Accounting Classifications

Mr. Johnson tried to bring out an extended discussion of the revision on the floor of the meeting but inasmuch as the committee had held an open meeting the day previously at which this subject had been aired at length, the members apparently did not believe it necessary to go

over it in further detail. Mr. Johnson called on Alexander Wylie, director of the I.C.C. Bureau of Accounts, to address the meeting but Mr. Wylie had had the misfortune to break his glasses and was not in the room. However, the viewpoint of the commission's representatives was indicated in part by Fred A. Barnes, assistant director of the Bureau of Accounts, who said:

"The subject of cost accounting that your president mentioned is one that will be quite a live one before the commission. When cost accounting is discussed, it should not be considered an entirely new matter. Under our present accounting rules, costs are shown. The prime question, with regard to cost accounting, is as to how far the application of the accounting rules shall extend to show costs."

Wage Statistics

Replying to suggestions of various carriers that the wage statistics might be simplified now that the Labor Board had been abolished, M. O. Lorenz, director of the I.C.C. Bureau of Statistics had advised that the new Board of Mediation had requested that no changes in the present forms for wage statistics be made before January 31, 1927. Mr. Lorenz suggested a new report having 107 reporting divisions instead of the present 148 and asked that it receive the consideration of the accounting officers. A subcommittee, headed by W. C. Wishart, comptroller of the New York Central has been appointed to study the situation.

Assignment of Railway Operating Revenues and Expenses to States

This subject brought up originally by the Southeastern Association of Railway and Public Utility Commissioners, was covered in the report by reproduction of series of letters and was continued on the docket for the incoming committee.

Proposed Formula for the Ascertainment of Freight Terminal Costs

The most interesting feature about this formula is its length and complexity. To reproduce it in Bulletin No. 113 required 16½ large pages of small type. The committee expressed its opinion regarding the formula as follows:

1. The formula proposes the ascertainment of switching costs and other freight terminal costs per car or per ton at terminals where applied, including rentals, taxes, and a return on the investment, and this separately for carload and less than carload freight. It was submitted by the Bureau of Statistics as a possible standard method to be used in future by carriers in the ascertainment of freight terminal costs at individual terminals and also generally for a district or territory through its application at a number of representative stations.

2. To accomplish its objectives the formula either directly provides for, or a practical application compels, a large number of arbitrary apportionments between freight and passenger service, between Road and Terminal service, between carload commodities and l. c. l. traffic, and between the various intra-terminal zones in which separate switching costs are to be computed. Such arbitrary apportionments have been carried to such an extreme that practically no item of switching cost entering into the total result will represent actualities and the final assembled cost will represent little more than an assemblage of items resulting from arbitrary apportionments.

3. In selecting the methods and practices to be followed in this proposed formula, from the terminal cost formulas that have from time to time been applied by carriers in estimating local switching and terminal costs, it appears that there has not been a careful selection of methods as between those that experience has shown to be impractical and unjustifiably expensive as against those which have been found more practical and only moderately expensive. This is particularly true in respect to the selection of the zoning plan, based on classes of tracks, for developing various intra-terminal switching movement costs and which practice having been discarded in other tests because such zone boundaries could not be made to conform to the manner in which the switching operations are conducted and the conduct of the switching operations cannot be changed to conform to the arbitrary zone boundaries that may be fixed. As a result of this condition the larger portion of the expense has to be arbitrarily apportioned to such zones involving the recording and compilation of various classes of zone units of service for use as factors in making these arbitrary apportionments and incidentally involving a large compilation expense which is not justified by the character of the results obtained. Under other tests the switching operation costs are segregated into classes of switching and which can be largely done on an actual basis as that plan follows along the natural lines in which the operations are performed and the expenses incurred. It is true that the other tests for segregating the switching operating expenses into classes of service generally provide for an arbitrary apportionment of the maintenance of tracks and yard facilities into classes of switching, while the proposed zone formula contemplates that these expenses will be largely segregated on an actual basis, but the latter is an assumption as in actual practice this cannot be accomplished because the basic records are not kept in the contemplated individual track and facility detail and do not lend themselves, to this purpose, and consequently the larger portion of the maintenance expenses have to be arbitrarily assigned to these zones. Therefore in the end there is no more accuracy in this zone plan than in any other plan providing for arbitrary apportionment of maintenance of way expenses and which represent from 10 per cent to 15 per cent of the total, while in respect to the remaining 85 per cent to 90 per cent there is obviously less acuracy under an arbitrary assignment to zones than under the somewhat natural segregation into classes of switching service.

4. The proposed formula provides for a number of other impractical methods, but as many of these are trivial in effect the further review will be confined to the following more important items which will further illustrate the character of costs provided for:

(a) *Freight Car Repairs.*—Provision is made for an arbitrary apportionment of the entire

The Delegates Visited the C. & S.'s Famous Georgetown Loop

line freight car rentals, paid and received, between the rental proportion and repairs and adding the latter element to the repairs expenditures reported in account 314—Freight train car repairs.

The next step requires another arbitrary apportionment of the total car repairs as above ascertained between repairs due to decay and repairs due to use. The repairs due to decay are then resolved into a cost per car day and assigned to the terminal under review on the basis of car days at the terminal.

The terminal proportion of repairs due to use are to be developed during the test, through inspections of the cars entering and leaving and moving within the terminal and the cost of damages noted in such inspections are to be calculated under A. R. A. rules and rates. These inspections are, however, not to include the ordinary wear and tear repairs resulting from continued road and yard use and which should be estimated under some indeterminate method on the entire line and assigned the terminals under review on a mileage basis, but provision is made that the terminal portion of this class of repairs may be omitted if there is no definite basis for estimating the terminal proportion.

Your committee submits that the arbitrary bases specified for dividing the car rentals between the rent element due to decay and use, are purely hypothetical and highly questionable. Further, that the method prescribed for determining the terminal repairs resulting from use is altogether impracticable, and finally, that the car repairs charged against the terminal service under this plan represent only a result of the various calculations made and not costs.

(b) *Freight Car Depreciation and Retirements.*—The element of depreciation included in the entire line car rentals paid and received is arbitrarily fixed at 9.97 per cent and which is to be added to the depreciation charges in account 315 and these results together with the retirement charges are to be converted into depreciation and retirements per car day and assigned to terminal on the basis of terminal car days. It is pointed out that no arbitrary rate of depreciation adopted would be applicable to all carriers alike.

(c) *Taxes and Returns on Investment.*—The formula provides that, if not actually ascertainable for the terminal under review, the ratio of Taxes and Return on Investment to operating expenses shown for entire line should be applied to the terminal operating expenses, which in effect would assign to Terminal the same ratio of investment per dollar of operating expenses as obtain on the entire line. As it is unlikely that the actual investment in the freight terminal property under review will be available, your committee submits that this basis does not suitably recognize the value of the terminal property, nor does it allow for an adequate return as such may not prevail on the entire line of road.

General.—In addition to the principles and practices specially mentioned, your committee finds that in many of the bases of apportionment and in the method of application specified, there are unnecessary intricacies and technicalities introduced which aside from being more or less impracticable operate to greatly retard the compilation of the data and unduly adds to the expense of making the tests without materially improving the accuracy of the result.

An intensive comparison of this formula with methods used in other tests which have been made by carriers does not lend support to the bureau's contention that the amplifications introduced in the proposed formula tend to greater accuracy. On the other hand, these amplifications operate to very substantially increase the cost of application and it may here be observed that accuracy in these matters is not necessarily obtained through the introduction of additional arbitrary apportionments and complications involving more work and expense but rather through analyzing the terminal expenses and determining costs along the natural lines in which the business is conducted. The proposed formula, in respect to the switching activities, is not so designed, and in the opinion of your committee it would not produce sufficiently accurate results to justify the expense of its application for developing local terminal costs at any terminal, much less for general application in determining the terminal costs of a district or territory as no provision is made for developing the train switching costs at terminals where no regular switching service is maintained, nor marine costs where they are maintained. Furthermore, the expense of such general application would be altogether prohibitive.

In the adoption of a standard formula the cost of applying it should be given due consideration as well as the accuracy of the results and this with reference to the beneficial use made of the ascertained information. At their best the results under any terminal formula are but approximations and the difference in the degree of accuracy under different tests is largely a matter of individual opinion, consequently it is felt that the cost of application should rather be the primary consideration in the matter.

Report of Committee on Freight Accounts

This Committee reported on 74 subjects. The chairman of the Committee, H. B. Ochiltree, auditor of freight accounts, Union Pacific, was absent on account of illness and the report was represented by W. B. Kraft, auditor of revenues of the Pennsylvania. An interesting feature of the presentation of the report was a brief statement made by F. W. Pope, auditor of freight accounts of the Southern Pacific and a former chairman of the committee on the general subject of freight accounting. Mr. Pope said in part:

The Problem of Freight Accounting

Some years ago I met, by appointment, the accounting officer of a large middle-western road. I had to meet him in his office at nine o'clock at night. When I got there, the gentleman—he was the comptroller of the road—was very busily engaged in checking vouchers. He probably noticed a little surprise on my face, and he explained to me the importance of checking vouchers—how difficult it was to get competent men to check vouchers. He said he had been working day and night and all his spare time on it, and during the past week he had picked up over a hundred dollars. When I entered his service some four months later, after having made a little study of his freight accounting methods—which I found were not as complete as I thought they ought to be—I took a half-baked clerk, getting much less than $100 a month, detached him from his other work and put him to checking some accounts that had never been checked. He picked up $2,600 which was placed in the treasury at a cost of considerably less than $100.

Armed with that information, I addressed a letter to that gentleman, and suggested to him that this work had not checked, that it ought to be checked, that there was a lot of money in it, and for every dollar expended, we would recover ten. I recommended that he give me three men, at $100 at month apiece, to do this work. In due process of time there came back a lengthy letter telling about the cost of running the receipts department; it wound up by saying the recommendation would not be approved; the idea of increasing the expense of the receipts department $3,600 a year was ridiculous. That is my text, and while it may be thought somewhat unusual, I am afraid that it expressed the general idea of some of our railway executives.

Disbursements accounting is usually very carefully and thoroughly done. A voucher covering a disbursement is usually checked by several people, perhaps, and, it has to have some four to ten signatures. They send in a voucher for 80 cents with signatures all the way up, from the department head to various executives, eight or ten, or a dozen of them.

It seems to me that the situation with reference to checking freight receipts should be corrected. I have seen, in some offices, instances where a great deal of receipt work is not checked at all. We all know that, generally speaking, our freight revenue is about 75 per cent of the revenue of the road. Also, we know that the basic accounting document for freight revenue is the waybill; that waybills are handled in tremendous quantities.

The work that has to be done with a waybill before

the accounting officer knows he has completed his duty and properly protected the revenue of his road, is something stupendous. Take the case of a fair-sized road, handling a million waybills a month. These waybills, perhaps, represent somewhere between ten and fifteen million dollars in freight revenue a month. We have several different classes of waybills, generally speaking. There is the local waybill, from one point to another on the same line; there is the interline received waybill, from a point on another line to a point on your line; there is the interline forwarded waybill, from the first line to another line, and the interline intermediate waybill, covering freight received from the carrier at one junction, turned over to another carrier on another junction, the kind of traffic usually designated as overhead, in our accounting procedure.

Protecting Revenues

Now, in protecting our revenues, there are two main things to consider. The freight accountant must have an absolute and complete record for every dollar's worth of freight transportation performed by the road. He must know every waybill made at a point on his road; every waybill received from another road; every waybill handled in the overhead service, and his system of checking must be so complete that he must know those waybills have been reported by some other company, or by his own agent. He must have forwarding reports; he must have passing reports from the junction agent, as to the traffic received from other lines, or delivered to other lines. When this check has been made complete, he knows somebody has accounted for all the waybills made, representing the freight traffic carried by his road. He must then revise every waybill and every settlement, to determine if his road has, in fact, received and has placed, or will place, in the treasury every dollar that it has earned, based upon the published tariffs and divisions.

I do not know whether all of you have thought about what it means to revise a waybill, or revise a settlement. Generally speaking it takes a longer time to make a good revising clerk than it does to make an ordinary lawyer. Our present tariffs are extremely complex and become more complicated every day, and a man with less than two or three years' experience, ordinarily, is unable to revise the average waybill properly; a great many executives do not know that. I know there are many carriers which do not even revise some of their waybills; some carriers revise a comparatively few; some carriers revise local waybills; some, part of the interline; some revise interline received, in part, trusting to the other lines to call attention to something that may be wrong. A great many have never placed in effect the passing reports recommended by our association. There are a great many carriers in this country whose accounting officers do not know, have absolutely no complete information, of the amount of traffic carried, or the amount of money they have earned in this respect.

A particular point I should like to make is this. Much money can be lost by an incomplete checking of our freight revenue accounts. If we would interpose anything like the same amount of labor and safeguards in checking the freight revenue accounts that we do in checking our disbursements accounts, I think we should all be a great deal better off.

We ought to spend a little more money when necessary, and to put in as complete a system of checking our revenue accounts as we do in checking our disbursement accounts, and until we do that, we are not properly fulfilling the responsibilities we have assumed as Freight Accountants.

Interline Switching Settlements

The committee recommended a plan for interline switching settlements, the purpose of which was outlined at some length in a statement presented by S. L. Porter, auditor of freight receipts of the Chicago, Burlington & Quincy. Mr. Porter said in part:

The association has successfully provided workable and uniform rules for the settlement of interline freight traffic but the same success has not heretofore attended attempts to promulgate a uniform plan of interline switching settlements, due, no doubt, to the fact that the subject has not heretofore been enthusiastically and vigorously attacked.

The plan we are submitting for your consideration has been adopted quite universally throughout the Middle West and is being given serious consideration in the West, Northwest, South and Southeast.

A road in the middle west in an attempt to revise its book of instructions to agents, found it difficult to write rules to govern the accounting of interline switching revenue because of the different plans of switching settlements used by its connections. Among them were the way bill plan, bill and voucher plan, and station settlement plan.

Realizing the difficulty of writing a uniform set of switching settlement rules, a movement was initiated which resulted in a meeting being held in Omaha in August, 1925, which was attended by representatives of 23 railroads.

It was then that the foundation of this plan was laid, and at the same time it was decided to give it a trial in Kansas City.

The plan was given a trial for a period of three months and it worked so successfully during that period that it was decided to adopt it permanently. Since that time, the adoption of the plan has been quite general throughout the Middle West, and it is only a question of a very short time when it will undoubtedly be the only settlement plan in use in that territory. Briefly the plan is as follows:

The interchange report is the underlying record from which the interline switching settlements emanate. From the interchange report the agent of the forwarding carrier, not later than 96 hours after the date of interchange, prepares a switching settlement statement with a sufficient number of copies so that each interested carrier may be furnished with two copies. Separate statements are prepared for each destination carrier, and for one or more intermediate carriers interested in the movement. The fowarding, or issuing, carrier sends to the destination carrier three copies of the statement. The destination carrier must, within 48 hours after receipt make such corrections as may be necessary and return to the issuing carrier. Should the final settlement statement indicate that changes have been made by the destination carrier, the issuing agent must correct his copies as well as those of the intermediate carriers, if any, and then forward two copies to each intermediate carrier. If a sheet is once changed and receipted by the destination carrier it must not again be changed before reporting.

The plan also provides for subsequent corrections to be covered by correction sheets which, when certified correct, are forwarded to the maker of the original statement to be included in the next settlement statement.

The agents of interested carriers retain one copy for their file and send one copy to the accounting department. At the close of the month the settlement statements are summarized and the settlement is on the basis of the net balances.

Serious consideration was given to the preparation of the settlement statements, particularly as to the record

from which the basic data should be taken. It was finally decided that the detail should so far as possible be taken from the interchange report for two reasons: (1) It should represent the deliveries actually made during each day. (2) Simplification in checking by the destination carrier as the cars appear in the same order on the settlement statement as they appear on the interchange report.

But it was known that the interchange reports at some interchange points were being improperly made and to overcome possible errors in the interchange reports and omissions therefrom it was important to have a countercheck through the use of certain underlying records.

The records available are the original or copies of received and forwarded waybills, copies of freight bills, switching orders received from the public, and switch foremen's memorandum record of all connecting line and commercial switch movements. This check is, I believe, very important for it provides a more nearly correct interchange report and when this report is used the omissions from the switching settlement statements should be negligible. The plan is not complicated and is flexible in that it can be changed to meet local conditions without destroying the fundamental principles.

The advantage of this plan over the waybill plan as it appears in the procedure is apparent because the forwarding agent's report is verified thoroughly and currently by the receiving agent and there can be no waybills or cars in transit. The work in audit office is simplified to the extent that it is not necessary to check the forwarded vs. the received abstracts.

The advantage over the station settlement and bill and voucher plan is also apparent because the delivery of cars, one road to the other, is completely checked currently by the receiving carrier. The final result is that when a switching settlement statement is received in the audit office the interchange of cars in switching service has been completely verified, so that after the arithmetic is verified, rates and absorption checked, the accounting for and the settlement of interline switching revenue for a month is complete.

A further advantage is a reduction in the number of statements required in connection with audit office work. All of the required information appears on the settlement statement.

Report of Committee on Disbursement Accounts

The disbursements committee devoted the greater amount of its attention during the past year to the subject of stores accounting. Its report was presented by F. A. Deverell, assistant comptroller of the Baltimore & Ohio, and was received without extended discussion.

The outstanding activity of the committee was the preparation of an extended and detailed plan for material accounting of such scope that its presentation required 120 pages of the agenda printed for the most part in small type. Included were 70 new standard forms. Supplementing this work in connection with stores accounting, were extended recommendations relative to the comparison of material balances, this work having been carried out by a subcommittee working in co-operation with A.R.A. Division VI—Purchases and Stores. It was noted above that several representatives of Division VI attended the accounting officers' sessions. These included W. J. Farrell, secretary, U. K. Hall, general supervisor of stores of the Union Pacific, and O. Nelson, general storekeeper of the Union Pacific. Mr. Farrell spoke of the co-operation between the two associations as follows:

Co-operation with A. R. A. Division VI—Purchases and Stores

We, in the purchases and stores department, are vitally interested in material store expense, and anything that enters into it, and we want, and have received, your co-operation for the past year, on this joint committee. This has indeed been very helpful, and on the one or two corrections we made in our annual meeting, particularly the correction regarding the material delivered to the shops, we have had considerable discussion. The correction was not made in the sense of contradicting the committee's report, but some of our members felt that at the present time so many of the railroads are charging material in a different way as it is delivered on the store or the shop balance. In making a proper comparison of material balances, and charging anything that enters into material store expense, if you would bear with us on this one item for the future, we believe we can arrive at some definite basis whereby all of this material will be charged in the same manner on the various railroads. That will help us, we feel, in the comparison of material balances. In our convention discussions, some of us say, "We charge that to shop expense," and others say, "We charge that to store expense." It will help us considerably in comparisons of balances, if we can have that classified and made to read one way. That, of course, we realize, will be entirely up to you, and we hope you will bear with us and see it the way we do, because we look to you for these matters.

President Bissonnet supplemented the discussion on this point by remarking: In the first place, I do not see how store department expense has any relation to a comparison of material expense. This question of material store department expense is a very peculiar one. If you have an alert storekeeper, you will find he will reach out and want to get all the labor charges he can to keep his material stock in proper form, and do lots of things for the management, and keep them down. I had quite a lot of experience in that connection myself. About 14 years ago, we had a storekeeper who was very active, and he wanted all of the shop labor and store department expenses, because, at that time, as some have said recently, if you get the charges of material store expense, you would compare it and charge it out on the material on a percentage basis, and nobody would know anything about it. That is absolutely absurd, because I know on several railroads that store department expenses are analyzed and shown in comparative statements for the consideration of the management, and they can control those expenses as well as they can control the salary of the general storekeeper.

Standard Invoice Form

The form referred to is the invoice form to be used by railway supply houses and similar concerns for rendition of bills against railroads. What has taken place was outlined in a brief statement by J. C. Wallace, general auditor of the Cleveland, Cincinnati & St. Louis, who said:

At the annual meeting held in Cleveland, in June, 1922, the committee on disbursement accounts recommended and the Association adopted the revised R.A. O. A. standard form 201, which became known as the standard invoice form. Subsequently the form underwent several minor revisions as a result of co-operation

and collaboration on the part of your committee with organizations, such as the National Association of Purchasing Agents, the American Railway Association, etc. On January 14, 1925, in Washington, a national conference on this subject was held under the auspices of the U. S. Department of Commerce, which conference unanimously adopted the national standard invoice form for use.

The Department later issued a pamphlet known as simplified practice recommendation No. 37, containing the results of the national conference on this subject. As a result, the national standard invoice form was very generally adopted throughout the country, and was the means of promoting efficiency and economy. The commerce department's estimate of the saving that would result from the universal use of the form was about $18,000,000 per year.

However, shortly after the national standard form became effective one of the country's largest corporations with a tremendous purchasing power, devised what it called the "Uniform Invoice." It has required two or three years' time and many meetings of representatives of your association with those of the large industries and trade associations to effect a compromise between the two forms, such meetings being held under the auspices of the department of commerce and presided over by the chief of the Division of Simplified Practice.

On February 16, 1927, a joint committee representing the proponents of the national standard invoice form and the uniform invoice unanimously endorsed a form known as the "Simplified Invoice," a reproduction of which appears on page 301 of the agenda. This invoice, it is believed, embodies the best features of both its predecessors and your committee recommends that R. A. O. A. Standard Form 201 be revised to accord with this sample.

[The "one of the country's largest corporations" referred to by Mr. Wallace is the Ford Motor Company. The new "simplified invoice" was shown in the *Railway Age* of May 28.]

E. R. Woodson, secretary of the association supplemented Mr. Wallace's remarks by pointing out that the invoice was not suitable for bills rendered by public utilities. He said:

A question arises as to whether the railroads should, or can, adopt the simplified invoice for bills that they render, either against railroads whether for car repairs or for other purposes, or against an outside concern, such as for the sale of scrap or for services rendered to them, and so on. It is not contemplated that the simplified invoice would be adapted to all lines of business. One of the lagest users of invoices in the world could not, and would not, use the simplified invoice. I refer to the Telephone Company, which renders about 15 million invoices a year. The simplified invoice is not adapted to public utilities; it could not be used by the gas companies or the electric light companies. The freight bills that are rendered by the railroads are primarily invoices. They are for a service rendered by the railroad, and it would not be contemplated that the simplified invoice could be adapted to these diversified purposes, especially relating to public utilities. The railroad invoice, so called, is a mandatory form that has been recommended by the disbursement committee, and adopted by the association, and it is really more in the nature of an invoice than an actual invoice itself. In the evolution and the developments that led to the simplified invoice, it was distinctly recognized that it could not, and would not, be adapted to the use of such public utilities as had to render invoices for service. It is for the sale of tangible things.

This was covered in subject 14 and the committee submitted recommendations covering methods to be used. One of the members of the committee, B. A. McManus, auditor of disbursements of the Chicago & North Western, outlined what the committee had tried to din a brief statement and emphasized the importance of this phase of accounting.

Other Committee Reports

The other committee reports were adopted without extended discussion or important change.

Election of Officers

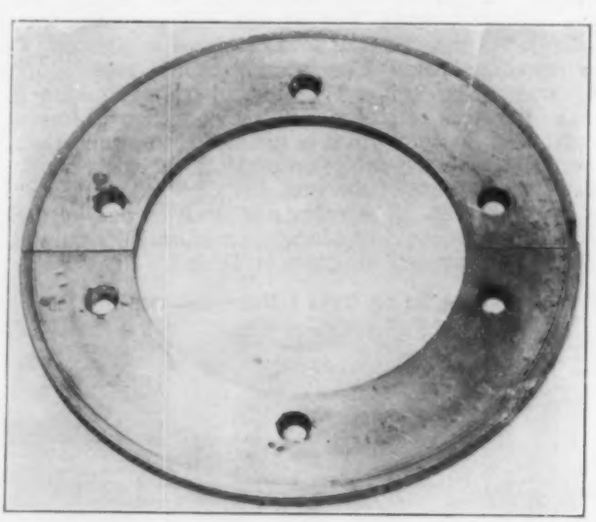
The association elected the following officers for the coming year: President, E. H. Kemper, comptroller, Southern Railway; first vice-president, H. W. Johnson, comptroller, Chicago, Burlington & Quincy, and second vice-president, T. O. Edwards, general auditor, Southern Pacific. E. R. Woodson was re-elected secretary.

The following were elected members of the Executive Committee: F. J. Fell, Jr., comptroller of the Pennsylvania; W. B. McKinstry, comptroller of the Central of Georgia, and E. M. Thomas, comptroller of the Chesapeake & Ohio to serve for 2 years and H. S. Palmer, comptroller of the New York, New Haven & Hartford, to serve for one year.

Atlanta, Ga., was selected as the place for the 1928 annual meeting which will be held there the first week in May.

Hub Liner of Hunt-Spiller Gun Iron

THE Hunt-Spiller Manufacturing Corporation, 383 Dorchester avenue, Boston, Mass., is now manufacturing and has in railroad service two part hub liners made of air furnace gun iron. The hub liner shown in the illustration had been in service for 66,500



A Hunt-Spiller Gun Iron Hub Liner That Showed a Wear of Only 3/32-in. After a Service of 66,500 Miles on a Mallet Locomotive

miles on a Mallet type locomotive. Its original thickness was ¾ in.; when removed, the thickness was 21/32 in., which gives a wear of 3/32 in.

Volume of Unapplied Material Was Greater in 1926

Preliminary figures show $26,000,000 more stock on hand on Class I roads at close of year

THE railroads of the United States had over $26,000,000 more capital tied up in unapplied materials (comprising fuel, rail and ties as well as miscellaneous supplies) at the close of 1926 than at the close of 1925, according to the annual reports of Class I carriers. Preliminary figures of 109 Class I roads, including all the large carriers, shows the total value of material carried in stock at the close of 1926 by these roads to have been $549,986,550 as compared with $523,740,948 for the same roads at the close of 1925, or an increase of $26,271,602.

The increase in the stock balance for 1926 is a reversal of the trend of the previous two years, the value of total unapplied stock on hand for *all* Class I railroads at the close of 1925 having been $34,195,792 less than at the close of 1924, while that at the end of 1924 was $122,676,913 less than the stock on hand at the end of the preceding year. The increase in the supplies of 1926 was not large, however, amounting only to 6 2 per cent of the stock carried at the close of 1925, and leaves a total stock balance which is still less than at any time since 1918 with the exception of 1922, when the stock balance at the close of the year was slightly less than at the close of 1926. The volume of stock carried by the Class I roads at the close of each year since 1916 and the decreases or increases are given in Table I.

Table I—Supplies on Class I Railways—1916 to 1926

Year	Stocks on hand end of year	Increase from previous year
1916	$323,556,387	.....
1917	502,986,042	$179,429,655
1918	630,207,210*	127,221,168
1919	597,573,735*	—35,633,4 5
1920	755,563,278	157,989,543
1921	665,147,009	—99,415,1 9
1922	546,284,853	—118,862,246
1923	682 725,812	136,440,959
1924	560,048,899	—122,676,913
1925	525,853,107	—34,195,792
1925	523,714,943†	.....
1926	549,986,550†	26,271,602†

*Estimated for Class I railways on years of government operation on the basis of stocks held by all railways as shown by Interstate Commerce Commission reports.
†Total for roads shown in Table II.

Table II shows the roads included in the summary for 1926. In developing this table recognition has been given to the fact that in many instances the supplies carried in stock by one corporate property are in part or whole available to other corporate properties and that the supplies reported separately for several companies are acquired and handled by the same organization, etc. To compensate for such conditions and in order that the figures reported should facilitate comparisons the plan has been followed as far as practicable of consolidating the stocks of material by systems where the railroads have not reported the stocks carried in this manner. The principal cases in which consolidations have been made are as follows:

Atchison, Topeka & Santa Fe lines, comprising the Atchison, Topeka & Santa Fe, the Gulf, Colorado & Santa Fe and the Panhandle & Santa Fe.

Atlanta & West Point lines, comprising the Atlanta & West Point, the Georgia Railroad and the Western Railway of Alabama.

The Atlantic Coast Line, including the Atlantic Coast Lines and the Charleston & West Carolina.

The Baltimore & Ohio lines, comprising the Baltimore & Ohio, the Baltimore & Ohio Chicago Terminal and the Staten Island Rapid Transit.

The Chicago, Rock Island & Pacific, comprising the Chicago, Rock Island & Pacific, and the Chicago, Rock Island & Gulf.

The Cleveland, Cincinnati, Chicago & St. Louis lines, comprising the Cleveland, Cincinnati, Chicago & St. Louis, the Cincinnati Northern and the Evansville, Indiana & Terre Haute.

The Erie lines, comprising the Erie, the Chicago & Erie, the New Jersey & New York, and the New York Susquehanna & Western.

The Illinois Central lines, comprising the Illinois Central, the Gulf & Ship Island, and the Yazoo & Mississippi Valley.

The Kansas City, Mexico & Orient lines, comprising the Kansas City, Mexico & Orient and the Kansas City, Mexico & Orient of Texas.

The Kansas City Southern, comprising the Kansas City Southern and the Texarkana & Ft. Smith.

The Louisiana Railway & Navigation lines, comprising the Louisiana Railway & Navigation Company and the Louisiana Railway & Navigation Company of Texas.

The Louisville & Nashville lines, comprising the Louisville & Nashville and the Louisville, Henderson & St. Louis.

The Minneapolis, St. Paul & Sault Ste. Marie lines, comprising the Minneapolis, St. Paul & Sault Ste. Marie and the Duluth, South Shore & Atlantic.

The Missouri-Kansas-Texas lines, comprising the Missouri-Kansas-Texas and the Missouri-Kansas-Texas of Texas.

The New York, New Haven & Hartford lines, comprising the New York, New Haven & Hartford and the Central New England.

The Pennsylvania System, including the West Jersey & Seashore, the Baltimore, Chesapeake & Atlantic and the Pennsylvania.

The Reading, comprising the Reading, the Atlantic City and the Port Reading.

The St. Louis Southwestern lines, comprising the St. Louis Southwestern and the St. Louis Southwestern of Texas.

The Southern Lines, comprising the Southern, the Alabama Great Southern, the Cincinnati, New Orleans & Texas Pacific, the Georgia Southern & Florida, the New Orleans & Northeastern and the Northern Alabama.

The Southern Pacific lines, comprising the Southern Pacific, Pacific System, the Galveston, Harrisburg & San Antonio, the Houston & Texas Central, the Houston East & West Texas, the Morgans Louisiana & Texas lines, the Texas & New Orleans, and the San Antonio, Uvalde & Gulf.

Table II—Material and Supplies Carried, 1925 and 1926

	On hand Dec. 31, 1926	On hand Dec. 31, 1925	Increase	Per cent of operating expenses 1926	1925
Akron, Canton & Youngstown	$206,522	$165,328	$41,194	9.2	8.5
Ann Arbor	542,822	515,831	26,991	12.1	11.6
Atchison, Topeka & Santa Fe	27,066,494	24,447,535	2,618,959	16.1	14.9
Atlanta & West Point	1,505,081	1,465,302	39,779	15.5	16.0
Atlanta, Birmingham & Atlantic	818,583	911,136	—92,553	15.7	18.1
Atlantic Coast Line	9,012,266	7,711,515	1,300,751	12.2	11.4
Baltimore & Ohio	20,083,185	19,587,780	495,405	10.9	10.8
Bangor & Aroostook	762,203	973,081	—210,878	15.8	19.8
Bessemer & Lake Erie	842,075	713,450	128,625	8.5	7.2
Boston & Maine	6,972,467	6,664,665	307,802	11.2	10.5
Buffalo & Susquehanna	170,430	181,132	—10,702	12.2	12.0
Buffalo, Rochester & Pittsburgh	1,678,916	1,726,548	—47,632	11.2	12.5
Central of Georgia	2,066,098	1,992,304	73,794	9.1	8.8
Central of New Jersey	3,991,266	4,752,191	—760,925	8.7	11.5
Central Vermont	678,198	809,355	—131,157	15.3	10.8
Chesapeake & Ohio	6,167,900	6,292,177	—124,277	6.3	7.1
Chicago & Alton	1,331,831	1,209,866	121,963	5.5	5.1
Chicago & Eastern Illinois	1,640,122	1,730,656	—90,534	7.2	7.8
Chicago & North Western	13,509,202	13,530,679	—21,477	11.7	11.7
Chicago, Burlington & Quincy	14,023,738	15,896,613	—1,872,875	12.1	14.3
Chicago, Great Western	1,482,070	1,240,229	241,841	7.3	6.3
Chicago, Indianapolis & Louisville	1,454,975	1,331,422	123,553	10.9	10.3
Chicago, Milwaukee & St. Paul	14,057,799	13,987,266	70,533	10.9	10.7
Chicago, Rock Island & Pacific	10,368,839	11,404,616	—1,035,777	10.1	11.4
Chicago, St. Paul, Minneapolis & Omaha	2,392,443	2,256,368	136,075	11.2	10.3
Cincinnati, Indianapolis & Western	307,227	252,728	54,499	6.1	6.4
Cleveland, Cincinnati, Chicago & St. Louis	7,503,337	7,000,359	502,978	10.0	9.9
Clinchfield	838,183	773,523	64,660	16.1	....
Colorado & Southern	1,137,399	1,254,467	—117,068	11.1	12.8
Columbus & Greenville	187,923	198,425	—10,502	12.3	13.6
Delaware & Hudson	3,513,864	3,433,507	80,357	10.1	10.1
Delaware, Lackawanna & Western	3,832,624	4,297,274	—464,650	6.2	6.9
Denver & Rio Grande Western	3,004,745	3,146,487	—141,742	12.3	12.7
Detroit & Mackinac	356,206	369,795	—13,589	24.8	24.4
Detroit & Toledo Shore Line	251,140	179,689	71,451	10.7	8.4
Detroit, Toledo & Ironton	753,560	917,754	—164,194	8.6	10.8
Duluth & Iron Range	715,808	607,497	108,311	15.6	12.8
Duluth, Missabe & Northern	1,399,794	1,320,311	79,483	16.7	16.0
Elgin, Joliet & Eastern	1,305,480	1,562,185	—256,705	7.5	9.0
Erie	10,208,021	11,587,095	—1,379,074	9.7	11.7
Florida East Coast	4,138,715	4,267,002	—128,297	19.9	21.4
Fort Smith & Western	192,961	175,160	17,801	13.4	12.6
Fort Worth & Denver City	1,075,960	1,047,100	28,860	13.6	14.6
Georgia & Florida	244,207	195,985	.....	8.6	14.5
Great Northern	9,834,356	9,942,816	—108,460	12.4	13.1
Green Bay & Western	315,683	334,337	—18,654	24.8	33.2
Gulf, Mobile & Northern	479,312	413,945	65,367	11.0	9.5
Hocking Valley	886,567	1,231,849	—345,282	6.4	8.6
Illinois Central	14,418,501	14,320,928	97,573	9.9	10.5
International-Great Northern	3,374,603	2,104,465	1,270,138	22.2	....
Kansas City, Mexico & Orient	679,841	681,151	—1,310	11.3	13.9
Kansas City Southern	1,990,731	1,873,738	116,993	12.9	14.4
Lake Superior & Ishpeming	276,852	304,882	—28,030	19.2	21.0
Lehigh & Hudson River	245,534	181,957	63,577	10.4	8.1
Lehigh & New England	368,148	480,678	—112,530	10.2	11.8
Lehigh Valley	6,145,541	6,906,603	—761,062	10.1	12.0
Long Island	2,020,856	2,107,418	—86,562	6.9	7.8
Louisiana & Arkansas	408,243	396,704	11,539	14.4	14.6
Louisiana Ry. & Navigation	612,791	415,282	197,509	14.3	10.1
Louisville & Nashville	15,553,940	14,911,407	642,533	13.3	13.3
Maine Central	1,845,365	1,920,367	—75,002	11.6	12.2
Michigan Central	6,161,943	5,973,799	188,144	9.5	9.7
Midland Valley	412,980	211,657	201,323	16.1	7.6
Minneapolis & St. Louis	1,522,941	1,731,912	—208,971	11.4	13.2
Minneapolis, St. Paul & Sault Ste. Marie	4,776,492	4,966,394	—189,902	11.9	11.8
Mississippi Central	122,530	123,393	—863	10.1	11.0
Missouri-Kansas-Texas	6,777,784	6,278,585	499,199	17.0	15.8
Missouri Pacific	14,468,627	11,749,654	2,718,973	14.1	11.4
Mobile & Ohio	1,450,745	1,392,036	58,709	10.2	10.0
Monongahela	381,890	360,304	21,586	10.7	11.5
Montour	142,981	215,364	—72,383	12.1	21.2
Nashville, Chattanooga & St. Louis	2,641,162	2,630,150	11,012	13.9	13.7
Nevada Northern	145,819	160,036	—14,217	30.4	27.0
New Orleans Great Northern	187,372	156,121	31,251	8.2	7.8
New York Central	35,518,630	35,167,842	350,788	11.9	12.1
New York, Chicago & St. Louis	4,352,859	4,381,087	—28,228	10.9	11.0
New York, New Haven & Hartford	14,868,268	13,731,137	1,137,131	14.1	13.2
New York, Ontario & Western	1,580,821	1,716,101	—135,280	14.4	16.6
Norfolk & Western	13,707,207	12,027,043	1,680,164	19.3	17.6
Norfolk Southern	514,448	534,515	—20,067	7.2	8.0
Northern Pacific	11,364,792	10,935,207	429,585	16.7	15.6
Northwestern Pacific	754,965	750,290	4,675	14.7	14.4
Pennsylvania	55,825,305	45,970,456	9,854,849	9.9	8.5
Pere Marquette	2,536,121	3,055,392	—519,271	8.0	9.9
Pittsburgh & Lake Erie	3,122,958	3,227,228	—104,270	11.3	12.6
Pittsburgh & Shawmut	132,877	106,101	26,776	10.2	3.6
Pittsburgh & West Virginia	176,327	192,913	—16,586	6.1	11.7
Pittsburgh, Shawmut & Northern	231,002	241,320	—10,318	14.2	22.8
Reading	8,043,073	10,273,624	—2,230,551	10.2	13.7
Richmond, Fredericksburg & Potomac	1,576,898	1,398,752	178,146	18.4	17.0
Rutland	877,385	1,024,025	—146,640	15.8	18.7
St. Louis-San Francisco	4,739,478	5,191,881	—452,403	7.7	8.3
St. Louis Southwestern	4,223,766	4,266,393	—42,627	21.8	21.2
St. Louis Southwestern Ry. of Texas	1,838,383	1,583,035	255,348	25.0	....
Seaboard Air Line	7,533,911	5,449,110	2,084,801	15.2	11.6
Southern	16,402,867	15,187,909	1,214,938	11.6	11.2
Southern Pacific (Pacific System)	32,265,145	21,664,808	10,600,337	22.1	13.4
Southern Pacific Lines	42,582,351	32,940,084	9,642,275	19.8	14.6
Spokane, Portland & Seattle	679,999	789,655	—109,656	12.9	15.0
Tennessee Central	293,760	282,717	11,043	11.3	11.7
Texas & Pacific	4,030,977	3,952,931	78,046	15.2	14.9
Trinity & Brazos Valley	363,113	340,613	22,500	14.0	13.0
Union Pacific	16,469,133	16,761,430	—292,297	11.4	11.8
Los Angeles & Salt Lake	1,987,945	1,913,998	73,947	10.3	9.6
Oregon Short Line	3,640,930	3,616,982	23,948	14.4	13.9
Oregon-Washington Ry. & Nav.	2,566,917	2,632,405	—65,488	11.4	11.6
Union Pacific Company	7,922,540	8,283,461	—360,921	10.7	11.3
Virginian	2,571,631	3,786,449	—1,214,818	19.5	32.0
Wabash	5,391,958	4,660,085	731,873	10.1	9.1
Western Maryland	2,235,224	2,275,724	—40,500	12.8	16.3
Western Pacific	1,942,518	1,835,233	107,285	17.4	16.1
Wheeling & Lake Erie	954,093	1,004,727	—50,634	6.4	6.9
Wichita Valley	106,643	112,519	—5,876	12.1	12.6

The Union Pacific System, comprising the Union Pacific railroad, the St. Joseph & Grand Island, the Oregon Short Line, the Oregon-Washington Railroad & Navigation Company and the Los Angeles & Salt Lake.

For comparative purposes the value of material and supplies on hand at the close of 1926 is given for each system, and also the value of material and supplies on hand at the close of the preceding year, determined on the same basis. Out of 109 systems there were reductions in stock on 47 and increases on 62.

The largest reduction took place on the Chicago, Burlington & Quincy where the material balance at the close of 1926 was $1,872,875 less than at the close of 1925. Next to the Burlington is the Erie with a reduction of $1,379,074, while the Virginian is a close third with a reduction of $1,214,818. Other large reductions in stock include that of the Chicago, Rock Island & Pacific, amounting to $1,035,777; the Lehigh Valley, amounting to $761,062; the Central of New Jersey amounting to $760,925; and the Delaware, Lackawanna & Western with a reduction of $464,650.

The increases were both more numerous and larger than the reductions. The largest increases are shown for the Southern Pacific system with an increase in the stock balance of $9,642,275, and the Pennsylvania system with an increase of $9,854,849. The Missouri Pacific, the Atchison, Topeka & Santa Fe and the Seaboard Air Line showed increases ranging from $2,000,000 to $3,000,000 while increases between $1,000,000 and $2,000,000 took place on the Norfolk & Western, the New York, New Haven & Hartford, the International-Great Northern and the Atlantic Coast Line.

On April 1, the railroads had coal on hand amounting to $22,806,000 tons which is the largest reserve ever accumulated by the carriers, representing 59 days of supply as compared with 42 days of supply for the previous record month of March 1, 1922. While more than 9,000,000 tons of this coal was accumulated by the railroads since the first of the year, the explanation in part for the increase in the stock balance of December 1, 1926, over that of 1925 is found in part in the increased tonnage of this coal at the close of 1926 as compared with that of 1925.

There has been much criticism of the ratio which the material and supplies carried in stock by railroads bears to the annual operating expenses as a measure of the stock carried. It is commonly objected that this ratio is more likely to be unfair than a just measure of a road's efficiency in handling and controlling its supplies. On account of the prevalence in the practice of using this ratio, however, it is employed in this tabulation. In each instance the annual operating expenses of the various properties have been grouped and consolidated in the same way as in determining the supplies carried. The analysis discloses ratios ranging from 55 per cent of the annual operating expenses to approximately 25 per cent. In the 109 groups of roads involved there are 55 cases in which the ratio for 1926 is less than for 1925. On the Virginian there was a reduction in the ratio from 32 per cent in 1925 to 19.5 per cent at the close of 1926, on the St. Louis-San Francisco it dropped from 18.7 per cent to 15.8 per cent, on the Kansas City Southern from 14.4 per cent to 12.9 per cent. The number of cases in which the ratio is considerably below 10 per cent is large, including the Bessemer & Lake Erie with a ratio of 8.5 per cent; the Central of Georgia, 9.1 per cent; the Central of New Jersey, 8.7 per cent; the Chesapeake & Ohio, 6.3 per cent; the Chicago & Alton, 5.5 per cent; the Chicago & Eastern Illinois, 7.2 per cent; the Chicago Great Western, 7.3 per cent; the Delaware, Lackawanna & Western, 6.2 per cent; the Detroit, Toledo & Ironton, 8.6 per cent; the Elgin, Joliet & Eastern, 7.5 per cent; and the Erie, 9.7 per cent.

Tentative Valuation Report New York Central Railroad

WASHINGTON, D. C.

THE Interstate Commerce Commission on June 13 made public its tentative valuation report on the New York Central Railroad, as of June 30, 1917, finding a final value for rate-making purposes of $1,038,265,910 for the common-carrier property used, including $306,465,910 for the leased lines not owned. The final value for the owned property was placed at $737,401,514, which includes $5,601,514 for the property owned but not used, and the final value for the property wholly owned and used was placed at $731,800,000.

This is the largest aggregate valuation figure found in any of the reports issued by the commission to date except that on the Pennsylvania Railroad, as of 1918, made public in December, in which the total used figure was $1,078,180,000.

The present report covers 28 of the companies included in the New York Central system, not including the Big Four, Michigan Central or other properties controlled only through stock ownership which are included in separate reports. The wholly owned and used property, as of valuation date, included 3,704 miles of road and 10,119 miles of all tracks. The company also jointly owned and used 6.9 miles of road and 29.9 miles of all tracks; owned but did not use 9.4 miles of road and 33.8 miles of all tracks, and used but did not own 1.844 miles of road and 4.234 miles of all tracks. It also jointly used but did not own 6.8 miles of road and 11.2 miles of all tracks.

Outstanding capitalization on valuation date was $930,779,261 and the investment in road and equipment, as stated in the books, was $678,762,525. With readjustments required by the accounting examination, the report says, this would be reduced to $635,757,301, "of which $1,031,450,722 less an undetermined portion thereof assignable to offsetting items included in amounts recorded at $427,664,072 represents considerations other than money, the cash value of which at the time of the transactions we are not able to report because it has been impossible to obtain the information." The investment in improvements on leased railway property was stated in the books as $89,915,036.

Cost of reproduction new of the carrier property exclusive of land was placed at $660,942,916 for the property owned and $888,933,931 for the property used, while the cost of reproduction less depreciation was placed at $523,050,162 for the property owned and $711,670,798 for that used. The present value of carrier lands owned was placed at $153,826,697 and that of the carriers' lands used at $253,612,497, including bulkhead and riparian rights.

Securities of and other investments in other companies, classified as being held for non-carrier purposes, amounted to $265,917,561 par value and $240,218,473 book value, and the company held cash on hand and materials and supplies in the recorded amount of $42,017,239, of which $31,800,000 is classified as necessary for use as working capital and included in the final value.

The report covers the following companies of the New York Central system:

New York Central, Amsterdam, Chuctanunda & Northern, Beech Creek Extension, Beech Creek, Boston & Albany, Chester & Becket, Detroit, Hillsdale & South Western, Erie & Kalamazoo, Fort Wayne & Jackson, Genesee Falls, Hudson River Bridge Company, Kalamazoo, Allegan & Grand Rapids, Lake Erie, Alliance & Wheeling, Lake Erie & Pittsburgh, Mahoning Coal, Mahoning & Shenango Valley, New York & Fort Lee, New York & Harlem, North Brookfield, Pittsfield & North Adams, Providence, Webster & Springfield, Shenango Valley, Stewart, St. Lawrence & Adirondack, Troy & Greenbush, Wallkill Valley, Ware River, and West Shore.

Development Men Discuss Methods of Producing Traffic

In industrial development in Canada, a family of five is worth $800 *annually to the railroad*

INDUSTRIAL surveys in Canada show that an adult family of five is worth $1,500 a year to the community and $800 to the railroad through the purchase of necessities not raised on the farm, according to reports made at the nineteenth annual meeting of the American Railway Development Association at Detroit, Mich., on June 8 to 10, which was attended by 200 representatives of the railroads of the United States. The morning sessions of each of the three days consisted of general meetings of the Industrial, Agricultural and Public Relations sections, at which addresses were made on industrial development, natural resources, public relations activities, continuing education, immigration, taxation and cold storage. The afternoon of each day was devoted to sectional meetings.

A. L. Moorshead, industrial engineer of the Erie, New York, and first vice-president of the Association, was elected president to succeed W. H. Hill, assistant manager of stock yards of the New York Central. H. W. Byerly, general immigration agent of the Northern Pacific, St. Paul, Minn., and second vice-president of the Association, was promoted to first vice-president. The election of other officers will take place at the semi-annual meeting at Chicago. Miami, Fla., was chosen as the meeting place for the 1928 convention.

General Meetings Discuss Many Subjects

At the general meeting on the first day C. Price-Green, commissioner of natural resources of the Canadian National, spoke on the development of the natural resources on that road. He said that Canada is experiencing an era of expansion that is perhaps unparalleled in the history of nations and showed the progress that has been made in the development of hydro-electric power, the pulp and paper industry, mineral areas, mining, the chemical and manufacturing industries and agriculture. During the past 25 years water power has grown from nothing to 4,556,000 hp., involving an investment of $840,000,000.

He illustrated the growth of the industry by the fact that the exports of pulp and paper amounted to only $120 a few years ago, while in 1926 they were $173,000,000. Mineral production rose in 20 years from $70,000,000 to $242,000,000.

On the second day John D. Willard, director of continuing education of the Michigan State College, outlined the value of continuing education in agricultural development. He stated that continuing or adult education seeks to make education a continuous process with no gap between the formal studies of youth and those of later life. The success of agriculture depends on the intimate knowledge of a wider range of natural phenomena than any other art; on greater shrewdness and skill in applying this knowledge; and in addition is subject to the influence of more uncontrollable and unpredictable forces than any other art.

Norman S. Rankin, editor of "Agricultural and Industrial Progress in Canada," issued by the department of colonization and development of the Canadian Pacific, spoke on immigration, colonization and development in Canada. He described Canada's method of colonization, saying that when a community is shown that every adult family of five is worth $1,500 a year to the community and $800 to the railroad through the purchase of necessities not raised on the farm, interest is aroused. Communities or districts are then aided in forming colonization boards which include the leading banker, merchants, the mayor and farmers. The board makes a survey of the unsettled land, labor requirements, domestic requirements, and lands for sale and reports to the railroad on special forms. The railroad then pays the board a small fee for such information and immediately puts its foreign organization into action to find purchasers for the unsold lands or unoccupied farm homes, farm helpers of the nationality and experience required, domestics and boys. The movement began two years ago with a single board in Saskatchewan and today there are 150 such boards in active operation.

Public Relations Activities

C. D. Morris, vice-chairman of the Western Railways' Committee on Public Relations, spoke on "The Progress in Public Relations Activities on Western Lines," saying that unfair opposition to the nation's railroads is due to a lack of information respecting them, or to prejudice. Most uninformed people believe they are owned by Wall Street, by which they are used for speculative purposes only. The capital invested in our railroads has been gathered in relatively small amounts from the poeple in all sections of the country. It has been reliably estimated that 50 million people in the United States are directly interested in the returns from railway investments. It is readily seen, therefore, that the failure of the railroads to pay returns upon the capital invested in them disastrously affects a very large percentage of the country's population.

Mr. Morris also stated that the poeple not only own the railroads, but they control them. This is true not only by reason of our governmental policy respecting regulation, but quite as effectively through public sentiment. Under our form of government, public officials of all classes are largely controlled in their official actions by the sentiment of the people they represent. The importance of a public sentiment based upon widespread public information is immediately apparent. Public sentiment based up inadequate or erroneous information is calculated to do the railroads infinite harm.

From the standpoint of service, he continued, the railway problem is as much the people's problem as it is from the standpoint of ownership and control. There never has been a time when the nation needed or enjoyed so adequate a transportation service as it has today. We are doing business upon a larger and broader scale than ever, a thing that is rendered possible only by the improved service the railroads are now furnishing.

Sectional Meetings Study Specific Methods

At the meeting of the Industrial section John Beukema, secretary of the Greater Muskegon Chamber of Commerce, spoke on "The Requisites of a Campaign

for Industrial Development," and Franklin Edwards of the Industrial Property division of the Hudson Bradway Company, Detroit, Mich., described industrial surveys and real estate and industrial development in Detroit. Mr. Beukema said that the differentials between cities which make one a good location for an industry and another a poor location are largely undetermined. Men and management are more important factors in every industrial enterprise than the physical advantages of location. The four primary considerations in establishing industries are: The present trends in industry; the amount of industrial development taking place; the influence of communities on the establishment of new industries; and the co-operation of railroads.

The decentralization of industry is taking place to secure a greater proximity to market raw materials and labor supply and thereby reduce the cost of distribution and production. If proximity to markets and ease of distribution are the paramount considerations in any specific industry, the probabilities are that a metropolitan location offers superior advantages. If low costs of production, low labor turnover and freedom from labor troubles are the prime requisites of an industry the probabilities are that a smaller center would be a preferable location.

Probably the most important co-operation the railroad can give the communities developing industries is to assist in the development of a sane and intelligent program. The railroad can also render service in making surveys by developing local sentiment on their necessity. The establishment of aggressive industrial development departments adequately financed to do a positive and constructive job in the way of analyzing the industrial possibilities of each community in the territory served and developing prospects, is needed. It can also be of the utmost assistance in establishing standards and trade practices.

Livestock Loss Prevention

Earle G. Reed, agricultural agent of the New York Central, spoke on "How the Railroad Agricultural Departments May Aid in Livestock Loss Prevention." He said that between 50 and 75 per cent of the present losses to livestock are preventable through proper education and attention to correct practices in handling, feeding, loading and transportation. A great part of the responsibility for losses in transit lies at the door of the farmer, producer, feeder, shipper and handler before the stock is received in the cars. Proper and practical methods of feeding, handling and transporting must be determined. Through the means of state and federal appropriations it is possible for experiment stations and agricultural colleges to conduct investigations along the lines needed to insure a reduction in losses.

H. C. Rather, assistant director of extension in charge of corn borer control of Michigan State College, described the life and progress of the corn borer and outlined the practices used in combating this pest.

The Country Press

C. A. Radford, publicity manager of the Cleveland, Cincinnati, Chicago & St. Louis, explained the value of the country press as a means of public relations contacts. He said that that railroad is endeavoring to make the people in the smaller communities regard the railroad as they do other business institutions on their streets. An effort is being made to cultivate public opinion in the smaller cities and villages because that is where the dominant opinion of the state and nation is made. Attention is directed toward the community newspaper office as the man making a paper for a community best knows the people.

Each month the Big Four publishes one thought about railroading which is not controversial but interesting and instructive. It is never an appeal for traffic. The mats and cuts for the various newspapers are sent by railroad mail from the publicity department to the local agent who delivers them to the newspaper office. Any time after the ad appears he pays the bill in cash and the publisher does not have to wait for his money. The publisher reacts favorably and is willing to hear the railroad's side in controversial matters. When agricultural trains, safety pictures or any educational enterprise visits the community his editorial support is perfect.

E. S. Center, Jr., general agricultural agent of the Atlanta & West Point, spoke on "The Value of a House Organ in Development Programs." He said the Agricultural Bulletin started in 1924 by the agricultural department of the Atlanta & West Point, the Western Railway of Alabama and the Georgia, is so in demand that the number of pages has been increased from 8 to 60 and the circulation has grown from 2,000 to 10,000. Approximately 85 per cent of the mailing list consists of dirt farmers and the remainder includes agricultural workers of other railroads, various agencies interested in agricultural development, merchants and farmers. Personal material is obtained by men in the field, the agricultural college forces in Georgia and Alabama; the extension agents and special agents also have co-operated in furnishing material. From time to time field men are assigned certain topics for intensive study. The agricultural department furnishes information regarding its work. From time to time a page or two of comment from the readers is published.

Van Sweringen Hearing Develops Controversies

WASHINGTON, D. C.

O. P. VAN SWERINGEN, chairman of the Chesapeake & Ohio, appeared for further cross-examination on June 14 at the hearing on the application of the C. & O. for authority to acquire stock control of the Erie and Pere Marquette. The hearing at once developed into a series of controversies between counsel as to the extent to which he should be required to disclose details regarding stock transactions by the Van Sweringen interests running back to 1923, when they first acquired an interest in the C. & O. After objections by counsel to questions along this line put by Henry W. Anderson, representing the protesting minority stockholders of the C. & O. had been overruled by Director Mahaffie, of the commission's Bureau of Finance, who is presiding at the hearing, a formal request was made that the record be certified to the full commission for a ruling. Mr. Mahaffie had also denied a request that the matter be referred to Division 4 of the commission.

Questions as to the relation of the present Van Sweringen plan to the "four-system" plan which was suggested to the commission by the eastern railroads in 1924 and 1925, with a minority report from the Pennsylvania, brought out a discussion of the recent acquisition of control of the Wheeling & Lake Erie by the Nickel Plate, Baltimore & Ohio and New York Central. Mr. Van Sweringen said that the control had not been purchased jointly or under any common plan but that after he had learned that outside interests were buying Wheeling & Lake Erie stock he had gone into the open market and purchased a controlling interest in the stock which was later divided between the three roads

to which the road had been allocated in the four-sytem plan. The three roads each own one-third of a majority, Mr. Van Sweringen said, but they have no arrangement for acting together.

The point as to whether the three roads had not acted jointly was brought up by Mr. Anderson after he had read a quotation from the C. & O. application which described the proposed system as a competitor of the other eastern systems. Mr. Anderson asked if there had not been an agreement of the three companies against the Pennsylvania in connection with the grouping of the eastern lines but Mr. Van Sweringen said he did not understand it that way.

In response to requests made at an earlier session statements were filed in the record preceding Mr. Van Sweringen's taking the stand, showing the sales of Erie and Pere Marquette stocks from the date of the Nickel Plate decision to the end of 1926 and also purchases of C. & O. stock by the Vaness Company, the Van Sweringens' personal holding company. A statement was also furnished by Mr. Van Sweringen of the loans made by the Van Sweringen interests from various banking institutions, including those in which C. & O. funds were deposited, as well as a large mass of other information, to the introduction of which in each case the C. & O. counsel entered a formal objection. Mr. Anderson, however, expressed himself as dissatisfied with the form in which the information was presented, saying that he wanted to be able to use it in connection with the data furnished for the Nickel Plate hearing to trace the transactions back to the inception of the original Van Sweringen plan. "It is our view," he said, "that this is the development of a scheme of unification beginning back certainly before 1923. It was tried in one form which the commission rejected, and again in another which was not even presented to the commission and now we have a third form."

Herbert Fitzpatrick, general counsel of the C. & O. objected to a request for a statement of purchases of C. & O. stock back to 1923, saying that it did not represent any act of the applicant C. & O. company and when Mr. Mahaffie overruled the objection Mr. Van Sweringen asked for an opportunity to confer with counsel. Following the conference the formal request was made for a ruling by Division 4 and then by the full commission. Mr. Anderson amplified his question to cover purchases of Erie and Pere Marquette stocks and later additional details regarding the bank loans but at the end of the day's session he stated that some stipulation might be agreed upon as to some of the data requested and Newton D. Baker, of counsel for Mr. Van Sweringen, asked that counsel have an opportunity to check up the record of the hearing and indicate to the commission later as to just which questions, as to which there had been a refusal or failure to answer should be certified to the commission.

At one time Mr. Baker had advised Mr. Van Sweringen not to answer the question relating to the Wheeling & Lake Erie, but later said that he had forgotten that he was a director of the Baltimore & Ohio and that perhaps he should not have advised Mr. Van Sweringen on that point. Mr. Fitzpatrick continued to object, however, but after Director Mahaffie had ruled that the witness might answer he discussed the Wheeling & Lake Erie transaction at some length.

Some of the other questions to which there was objection to furnishing all the information called for by Mr. Anderson related to transactions of the Special Investment Corporation, the Pere Marquette Corporation, the Chesapeake Corporation and the Virginia Transportation Company, holding companies which have been involved in the various stock purchases.

The list of loans made by the Van Sweringen interests, which Mr. Anderson had said indicated that they had used the credit obtained by making deposits of railroad funds to purchase stocks some of which were proposed to be sold to the C. & O. gave the dates when they were made and paid, the rates of interests, and the collateral used. The largest loans were those from J. P. Morgan & Co., to the Vaness Company. There was one for $6,000,000 which had been paid, followed by one for $31,754,033 which had been paid with a new note for $40,000,000, and of the latter $20,000,000 had been paid off. The collateral for the balance of the note consisted of Nickel Plate, Erie and Pere Marquette stocks of a market value of $35,920,000. The list also included two notes for $6,000,000 to the First National Bank of New York, which had been paid, and three to the Guaranty Trust Company of New York, for $2,750,000, $500,000 and $350,000, which had been paid. The other loans were all for much smaller amounts.

With reference to the four-system plan, Mr. Anderson asked why the Pennsylvania, if it had participated in the plan, had been left out of participation in the Wheeling & Lake Erie. Mr. Van Sweringen said the Pennsylvania did not want to. He said that the Nickel Plate has no interest in the Western Maryland and that he did not know whether the Pennsylvania had opposed the Baltimore & Ohio obtaining control of the Western Maryland. He said he did not know whether the B. & O. does control the Western Maryland. When Mr. Anderson asked that a copy of the four-system plan be produced for the record, Mr. Van Sweringen said he thought it was on file with the commission. Mr. Mahaffie said the commission had a copy marked "confidential" but that he would have to look up the question of its confidential status.

At a meeting of the executive committee of the C. & O. directors held in Washington on June 13, President W. J. Harahan was instructed to request the Nickel Plate company for an extension for 90 days of the option which expires on July 1, for the sale of its holdings of Pere Marquette common stock to the C. & O. at $110. Mr. Van Sweringen while on the witness stand had expressed some concern as to whether this option could be extended, because there is a minority interest in Nickel Plate and the market price of the stock has increased about $5,000,000 since the date of the option.

Testimony relating to the C. & O. application for authority to issue $59,502,400 of additional common stock was presented on June 9, the main case having been temporarily suspended to allow O. P. Van Sweringen and other C. & O. witnesses to collect the voluminous data that had been called for by counsel for the minority. E. M. Thomas, comptroller of the C. & O. filed statements regarding the finances of the road and the purpose of the stock issue, which is to be substituted for $44,174,000 of first lien and improvement 5 per cent bonds now in the treasury of the company and to reimburse it for capital expenditures made and to be made. Director Mahaffie asked if the C. & O. had charter or corporate power to issue its common stock at a premium and when the witness said he was not informed said he would like to have the C. & O. position on that point developed on the record. L. B. Allen, assistant to the operating vice-president of the C. & O. filed the C. & O. budget of proposed capital expenditures, amounting to $21,000,000, with a description of each project and of the operating economies expected to result from the improvements. On cross-examination he said the budget includes no major improvements on the Chicago division.

On June 10 and 13 representatives of short line railroads that have intervened in the case were heard. In

general these took the position that the C. & O. application should not be granted unless and until provision is made in the plan for including connecting independent short lines. President Harahan in his opening statement had expressed a willingness to leave to the commission the determination of what short lines should be included in connection with any proposed unification but pointed out that at present the company is not asking authority for complete unification. At the conclusion of the short line testimony Mr. Fitzpatrick made a formal motion that it be stricken from the record as not applicable to the present proceeding. The motion was overruled.

The short lines that have intervened in the case are the New York & Pennsylvania, the Arcade & Attica, the Mt. Jewett, Kinzua & Riterville, the Prattsburg, the Morehead & North Fork, the Chicago, Attica & Southern, the Arcadia & Betsey River, the Middletown & Unionville and the Big Sandy & Kentucky River. Representatives of some of these roads as well as of the communities served presented testimony, while some of their statements were stipulated into the record. They all took the position that public convenience and necessity require their continued operation, that the transportation act contemplates that the short lines should be included in stronger systems, and that the larger roads should not be granted approval of their plans unless at the same time provision is made for including the connecting weaker roads.

W. J. Harahan, president of the C. & O., testified again on June 15 in relation to the proposed issue of common stock, which he said would provide funds toward paying for the $21,000,000 budget of capital improvements for 1927 and $52,824,786 for the purchase of stocks of the Erie and Pere Marquette. He gave a five-year forecast of the company's income, including dividends from the Pere Marquette, and its requirements, showing the amounts expected to be available for capital purposes. He said that in the past ten years the company's freight traffic has increased 76 per cent and its coal traffic 102 per cent while its investment in road and equipment has increased only 61.4 per cent and that the facilities have not kept pace with the increased traffic. However, he said, the increase in recent years had been abnormal and he estimated an increase in the gross revenues from $133,000,000 in 1927 to only $140,000,000 in 1931. Mr. Anderson questioned him at length as to why he considered the recent increase abnormal, and asked if the company's business would not continue to grow even without the acquisition of additional lines. Mr. Harahan said that some of the conditions that had caused the large increase in coal traffic would not continue and that while he expected an increase in traffic he did not think the C. & O. could have any great further development without the additional lines.

After having brought out that the C. & O. and the Virginia Transportation Company have already paid $23,519,737 for Erie and Pere Marquette stocks and that the options expiring in July call for $37,228,759, Mr. Anderson asked how the company expected to buy enough additional Pere Marquette stock to have control, and if it really expected to acquire control. He said that with the optioned stock it would have only 33⅓ per cent. Mr. Harahan said the board had authorized the purchase of enough stock to have control but that the financing of additional purchases had not been definitely determined upon. He said the chairman would decide, in connection with the board, when would be the advisable time to buy the additional stock. After bringing out that the Pere Marquette common is now about $130 in the market Mr. Anderson asked why the C. & O. should not issue a 5 per cent cumulative preferred stock at about par instead of common stock at par when it is now selling at about $180. He asked if it would be good financing to sell at par a stock carrying a 10 per cent dividend and earning about 25 per cent in order to buy Pere Marquette stock at $130 earning only 14 per cent. Mr. Harahan said he thought the common stock would make a better capital structure and that the rights of the stockholders to buy the additional stock must be considered.

Mr. Harahan was followed by two directors of the C. & O. who had voted in favor of the new plan, George T. Bishop, chairman of the board of the Washington, Baltimore & Annapolis, who said he owned 500 shares of C. & O., stock, and George Cole Scott, who was chairman of the committee representing the minority stockholders who objected to the original Nickel Plate plan. He said he owned 2,500 shares. Both were subjected to a close cross-examination by Mr. Anderson as to the reasons and facts which had influenced them to vote for the plan and as to their knowledge of the affairs of the roads. Mr. Anderson had previously tried to get several witnesses to admit that the entire plan was practically dictated by Mr. Van Sweringen and had brought out that there had been no meeting of the special committee of the C. & O., directors between July 2, when it was decided to try a modification of the original plan and September 29, when the new plan was adopted. Mr. Bishop, however, said that the subject had been discussed several times during the summer among the directors. While he said he could not recall all the facts and figures that were before the board when the plan was voted upon he said he was used to exercising judgment on reports made by experts. When asked if he did not know that the option price of $34.50 fixed for Erie common stock was not "about the highest price at which it had ever been sold," he said he believed that Mr. Van Sweringen's ability back of the Erie would make it worth much more.

Mr. Scott said that after the Nickel Plate plan had been rejected by the commission he and John Stuart Bryan had been elected to the board and appointed on the special committee to consider a new plan. Many meetings were held and he reached the conclusion that it was hopeless to try to arrive at ratios for the exchange of stock that would suit all interests. He said he had always favored acquiring the Pere Marquette, although he had opposed a combination of the C. & O., and the Nickel Plate, and that he had looked with some favor on the acquisition of the Erie.

At the meeting on September 29, he said, Otto Miller, a member of the special committee, suggested that the acquisition of Erie and Pere Marquette stocks by the C. & O., might be a solution of the problem and that Mr. Van Sweringen might be willing to give an option on his stock. He then thought, he said, that as the option did not cost anything the plan would be desirable if Erie stock could be purchased in the market at as low as $40. He said he did not know exactly who owned the additional stock which it was suggested might be acquired at the option price but that he had "surmised" that it was George F. Baker or the First National Bank. On cross-examination he said he had sold 4,000 shares of C. & O., stock last November or December but that it was because he needed the money for a special purpose. He had also bought and sold some Erie stock after the application was filed.

At the close of the hearing on June 15, Mr. Fitzpatrick filed a formal petition addressed to Division 4 of the commission for a ruling as to whether Mr. Van Sweringen should be required to answer the questions as to which the objections had been overruled by Mr. Mahaffie.

New Books

Track and Turnout Engineering, by C. M. Kurtz, Assistant Engineer, Engineering Department, Southern Pacific Railway Company, San Francisco, Cal., 457 pages, 4⅛ in. by 7¼ in. Illustrated. Bound in cloth. Published by the Simmons-Boardman Publishing Company, New York. Price $5.

This volume is arranged as a handbook on the design and installation of railroad turnouts and crossings, together with the field work and computations necessary for track connections under various conditions, and was prepared as a revised and enlarged edition of "Modern Location of Standard Turnouts," written by the same author in 1910. The diagrams accompanying the mathematical computations are clearly presented and are a material aid in following the text. While the work is based upon mathematical accuracy, cognizance is taken of the practice of trackmen in placing turnouts with reference to joints to eliminate as far as possible the cutting of the main track rails and hence will be found equally adaptable for maintainance of way and construction engineers.

The definitions of the various parts of turnouts and crossings, as adopted by the American Railway Engineering Association, are given in appropriate chapters and have been used in the text. The subjects are treated in sufficient detail so that the young engineer may acquire a full understanding of the principles governing the work, without in any way detracting from its value to the older engineer. Tables are given in the back of the book covering all data necessary for computations, thus making the book available for use in the field as well as for reference in the office or library.

In addition to the matter pertaining to turnouts, crossings and track connections separate chapters are devoted to vertical curves and to easement curves and superelevation.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

A Brief Analysis of the Great Northern and Northern Pacific Unification Plan and the Benefits to Be Expected. "The formation of the largest single railroad system in America in point of mileage and one of the largest in amount of traffic handled is definitely under way. . . ." 4 p. Pub. by Hodenpyl Hardy Securities Corporation, New York City. Apply.

Railway Motor Cars—List of References Supplementing List Dated September, 1925. Arranged chronologically to show developments from September, 1925, to date. 7 p. Issued by Library, Bureau of Railway Economics, Washington, D. C. Apply.

Statistical Railroad Summary 1920-1926. The latest of those useful blue sheets revised with 1926 figures complete and issued as supplement to Railroad Data of June 3, 1927. 2 p. Pub. by Committee on Public Relations of the Eastern Railroads, New York City. Apply.

Transportation, by Bird M. Robinson. Address outlining history and relationships of transportation agencies to Oklahoma City Traffic Club. 24 p. Publisher not given, but probably available at office of American Short Line Railroad Association, Washington, D. C.

Periodical Articles

Mississippi River Floods, by F. H. Newell. What has been done towards trying to control the Mississippi and what must be done in the future. American Review of Reviews, June, 1927. p. 592-600.

What Price Air Traffic? "The rapid development of flying waits, as it did in the case of the railroad, only upon the serious attention of the nations concerned; the materials and the need are at hand." American Review of Reviews, June, 1927, p. 649-650.

Looking Backward

Fifty Years Ago

The Cincinnati & Eastern (now part of the main line of the Norfolk & Western between Cincinnati and Norfolk) has been completed and opened to traffic from Cincinnati to Sardinia, Ohio, 47 miles. The line is graded to Winchester, 10 miles further east.—*Railroad Gazette,* June 15, 1877.

The great law of compensation has again made happy the "ticket scalper" who suffered so cruelly from the sudden reduction in eastbound passenger rates a few days ago. The expected rebound has occurred, and the scalper who had the foresight to keep on hand a good supply of low-rate tickets has recuperated his fortunes. The business has been made especially risky by the widespread adoption by the railroads of the "limited ticket" device.—*Railway Age,* June 21, 1877.

The Chicago & North Western has placed in service on its California line a train made up of three elegant Pullman sleepers, a hotel or dining car, a private car for the use of special parties and a baggage car. During the trial trip from Chicago to Milwaukee on June 16 there was no jarring, no rattling or other unpleasant feature in connection with the running of the cars; there were no disagreeable odors from the kitchens; there seemed to be no room for suggesting a single improvement. It is understood that the cost of each sleeping car was about $18,000.—*Railway Age,* June 21, 1877.

Twenty-Five Years Ago

The Great Northern has refused to accept from its connections any freight car not equipped with air-brakes or not equipped with a train pipe so that air-brakes can be connected through to cars behind.—*Railroad Gazette,* June 20, 1902.

The cost of furnishing the Interstate Commerce Commission with material for reports under the commodity classification order has been estimated by the comptroller of the Delaware & Hudson at $34,000 per year for that company. The Association of American Railway Accounting Officers estimates that the cost to all railroads in the United States will be about $4,000,000 per year.—*Railway Age,* June 20, 1902.

An informal vote taken at the annual meeting of the Association of Railway Telegraph Superintendents at Chicago on June 18, following the presentation of a paper on "Typewritten Train Orders," showed that practically every person present was in favor of using typewriters in train-order work. The debate brought out the fact that typewriting machines were not yet in general use on railroads, one road prohibiting them altogether. Station operators who used machines were in almost all cases compelled to own them, it was said.—*Railway Review,* June 21, 1902.

Ten Years Ago

Employees of the Canadian Northern have presented a memorial to the Canadian prime minister protesting the nationalization of that railroad and the Grand Trunk—*Railway Review,* June 16, 1917.

The Southern, to aid in discouraging the emigration of negroes from the southern states, has issued orders to discontinue the assembling, holding and using of extra passenger and baggage cars for labor movements, and to otherwise retard the negro exodus in every legitimate manner.—*Railway Age Gazette,* June 15, 1917.

The receivership of the Chicago, Rock Island & Pacific has been terminated in the federal court without foreclosure. A series of financing incidents in the recent history of the company has made the question as to who has the final control one which cannot be definitely answered.—*Railway Age Gazette,* June 15, 1917.

Odds and Ends of Railroading

By a singular coincidence, L. C. Levee is roadmaster of the Texas & Pacific at Addis, La., in the heart of the flooded district. Here is one Levee at least who has not broken.

For the most peculiar railway station name in the country, may we offer Bowlegs, Okla., in the oil fields. This town was named after Dave Bowlegs, a Seminole Indian who formerly lived in that vicinity.

We have commented from time to time on this page as to unusual names given to Pullman cars but perhaps the most unusual of all by reason of its commonplace character is the car "John Smith," which has recently been put in service.

G. E. Vanston, machinist foreman, Missouri-Kansas-Texas, Denison, Tex., lays claim to having the largest railway family in the service of any one railroad. Mr. Vanston has five sons and one son-in-law, in addition to himself, in M-K-T service. Four of the sons are employed at Denison. H. H. Vanston is chief clerk to the division engineer; D. A. Vanston is inspector; M. G. Vanston, machinist, and J. H. Vanston, storeroom helper. M. C. Vanston, another son, is general foreman at Wichita Falls, Texas, while the son-in-law, Claude Cannon, is machinist apprentice at Waco, Texas.

Should We Change the Name?, Asks B. & M.

Scene—North Station, Boston, 7.30 A. M.

Passenger—"What track does the 'Lindbergh' leave on?"

Gateman—"The Lindbergh? There isn't any such train."

Passenger—"Isn't there an express train to Portland, Maine, that leaves at 8 A. M.?"

Gateman—"Oh! You mean the 'Flying Yankee,' on track 15."

Half Fare for Dogs

Dog-fancying passengers in this country who may take their pets with them free of charge, even though in a different car, evidently have something to be thankful for. For instance, to compare conditions in England, consider the following letter published in the Times (London):

"Referring to my letter which you were good enough to publish on March 19 last, I have the greatest pleasure in stating that I have received a letter from the Great Western Railway letting me know that from June 1 next a passenger traveling with a cheap ticket can be accompanied by his dog on payment of the single rate only for the double journey. This railway company has also made the further concession of allowing the dog fare to be available from Saturday to Monday, and have eliminated the mileage condition. I hope that other great railway companies will allow the same conditions."

The Toy Electric Railroad

Acknowledgment is due to the toy electric train for building up and fostering a "fan" interest in the railroads. Originally a tin contrivance of no great resemblance to a real railroad, the toy has been so developed by the manufacturers that now, if one has the money to spend, he can secure an outfit which resembles a real railroad in many important particulars. Unfortunately for the kids, however, these railroads are often so interesting to their parents that the only time the youngsters get to play with them is when dad is at his office.

Be that as it may, we have heard of a New Yorker, Hugh Newsom, who has a layout which is the joy of the neighborhood youth, whom he has organized into a Junior Railroad Club to assist him in operating his railroad system. This system is so extensive that he requires 40 youngsters to assist him if he wishes to move all his equipment simultaneously. For his railroad he has the basement of an apartment house on Riverside Drive. He has 2,000 ft. of track with 97 switches, drawbridges, automatic signals, automatic train control, signal towers, stations and yards. There are 22 locomotives and 100 cars of all types. And Mr. Newsom operates his system as nearly as possible like a regular railroad. His young friends are, therefore, not only amused, but are trained in attentiveness and observation, and at the same time acquire some knowledge of the workings of one of the most important of modern industries.

Singing the Unsung Heroes

Railway men, both officers and employees, have been the modest heroes of the flood. Recognizing this fact, the Associated Press sent out the following dispatch from the flooded district which was printed in several hundred newspapers:

Railroading in the Mississippi valley during the present flood has produced some epic stories which never will be written because railroad men have not related the half of their experiences which they considered were in the usual performance of duty.

Diving under the flood to throw submerged switches, patrolling miles of water-hidden right of way, driving trains across flooded lowlands where the tracks were covered for as much as 20 miles on a stretch, sandbagging embankments, these were only a part of the tasks faced by railroad men in holding open as long as possible the lines of communication.

How many lives were saved and how much hunger and suffering was averted through the efforts of the railroads never will be known, but thousands of refugees were conveyed to safety and relief forces and supplies were hauled through long water stretches in order to meet emergencies in a dozen localities.

Heavy passenger trains crept through raging floods, preceded by an engine and box cars. The duty of the advance crew presumably was to go into the washout first, if any had occurred, and thus save the train. Men perched on the front of the engines alert for driftwood and other obstacles which might derail the train. Men, in hip boots, waded along the right of way waving lanterns at night to inspect every foot of the hidden track for possible washouts of embankments.

Such is the nature of the embankments that no danger of caving is felt unless a heavy current causes wash. Due to vigilant efforts the history of the flood does not record an instance where a passenger train met serious mishap.

Some trains were stalled in the flood, but were rescued quickly. Every rule of safety was observed, but these increased the day and night-long vigils of the men who ran the trains.

In deep flooded river bottoms, crews, riding in small flatboats kept pace with the trains to be ready to help with any obstruction. Their flambeaus flashing weirdly in the night, these men kept observers on the train warned of the rise of waters.

And, as the track began to reappear above the receding waters, hundreds of men are laboring repairing the damage and straightening tracks twisted by the currents, or warped by the long stand of the water.

Try Finding Your Train on This

A railway timetable probably unique in the United States is that pictured below. This table, printed in Chinese characters, keeps the Oriental employees of the Southern Pacific at

A Timetable Used by Chinese Employees of the Southern Pacific

Roseville, Cal., posted as to the arrival and departure of trains, class of equipment, upon what trains passes are honored, and other general information.

NEWS *of the* WEEK

P. R. R.—Photo by C. Parker

THE ST. LOUIS-SAN FRANCISCO will grant leaves of absence to all ex-service employees of the road who desire to attend the convention of the American Legion in Paris; and free transportation for the veterans to the seaboard will be requested of connecting roads.

OVER 4,000 EMPLOYEES of the Missouri Pacific, from all parts of the system, attended the fourth annual picnic at Dickinson, Texas, on May 28. The practice of holding a picnic each year was inaugurated on the International-Great Northern in 1923 and when this road became a part of the Missouri Pacific the practice was extended to the entire system.

A DISPATCHER AND A STATION AGENT of the Canadian Pacific have been committed for trial at Medicine Hat, Alta., on charges of manslaughter in connection with a collision between two freight trains near Seven Persons, Alta., on April 8, in which an engineman and a fireman were killed. The accused employees are J. W. Kipp, dispatcher and M. L. Dooley, station agent.

JOHN E. CURTISS of Lincoln, Neb., has been appointed as a member of the Nebraska State Railway Commission, succeeding H. G. Taylor who has become manager of public relations of the Car Service division of the American Railway Association. Mr. Curtiss was for seven years secretary of the commission and more recently he was secretary of the Lincoln Chamber of Commerce.

"SPIRIT OF ST. LOUIS" the name of the airplane with which Colonel Lindbergh has made his epoch-making trip from San Diego, Cal., to St. Louis, to New York, to Paris, has been adopted by the Pennsylvania Railroad as the name of its two 25-hour express trains which run daily between New York and St. Louis. These two trains, the "St. Louisan" and the "New Yorker" have now been in service nearly 20 years.

THE SIGNAL SECTION of the American Railway Association will hold its regular meeting at the Mount Royal Hotel, Montreal, Quebec, on Tuesday, Wednesday and Thursday, September 13-15. The first session will begin at 9 a.m., Eastern Daylight saving time. Hotel reservations should be made direct with the hotel management. Baggage which is checked must be examined by the Canadian customs officers before removal from railway stations.

PRESIDENT COOLIDGE on June 6 signed an executive order reinstating to the classified civil service of the government John T. Marchand, senior valuation examiner of the Interstate Commerce Commission, who has been with the commission for 37 years, or almost since its organization, except for about four years when he was assistant to President B. L. Winchell of the Chicago, Rock Island & Pacific. It was during this time that he lost his civil service status.

American Railway Express and Unions Agree

The American Railway Express Company has negotiated and executed five identical agreements with the following organizations representing its employees: Brotherhood of Railway & Steamship Clerks, etc., American Federation of Express Workers, Order of Railway Expressmen, Brotherhood of Railroad Trainmen, and International Brotherhood of Teamsters, etc. The agreements affect working rules only. The same rules and conditions contained in these agreements will be applied to unorganized employees.

Larger Output of Rail Joints and Structural Steel in 1926

The production of angle bars by rolling mills and steel works in the United States in 1926 totaled 210,861 gross tons, as compared with 200,413 gross tons in 1925, according to compilations prepared by the American Iron and Steel Institute. Other production figures for 1926 included under the same heading were tie plates, 608,878 gross tons; fish plates, 27,211 tons; and other rail joints, 19,773 tons. The corresponding totals for 1925 were 505,299 tons, 6,132 tons and 21,473 tons, respectively.

The output of steel plates and structural shapes in 1926 exceeded that for any previous year. Structural shapes were produced in 1926 to a total of 3,911,663 gross tons as compared with 3,604,130 tons in 1925, while the production of iron and steel plates and sheets in 1926 was 10,529,056 gross tons as compared with 9,807,659 tons in 1925.

Mexican Railways Operating Ratio Increases

In January, 1927, the operating ratio of the National Railways of Mexico was 98.66. This fact was brought out in an article appearing in El Universal, Mexico City, and translated and reprinted in the Wall Street Journal. The operating ratio for the year 1926 was 91.78. The railroads were returned to private operation at the end of 1925 under conditions designed to enable them to comply with their obligations. These obligations, it is said, are not being met and El Universal raises the question as to whether or not bankruptcy may be expected.

Maintenance of Way Men on L. & N. Get Increase

A Board of Arbitration composed of L. L. Morton, a special engineer, Louisville & Nashville, T. C. Carroll, vice-president of the Brotherhood of Maintenance of Way Employees, and Judge Charles Kerr of Lexington, Ky., neutral member, has filed a decision in the federal court at Louisville, Ky., granting wage increases to maintenance of way foremen, mechanics and laborers on the Louisville & Nashville. The decision was signed by Judge Kerr and Mr. Carroll. Eleven thousand employees are affected by the decision. Originally the men asked for an increase of 5 cents per hour.

Hearings before the board extended from May 12 to June 2 and followed the failure of the company and the employees to reach an agreement through the United State Board of Mediation. Increases granted were as follows: bridge and building foremen and assistants, extra gang foremen, section foremen, $6 per month; bridge and building carpenters,, painters,

(*Continued on page* 1974)

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
Akron, Canton & Youngstown	Apr.	171	$233,300	$216	$246,267	$40,632	$35,889	$13,152	$74,860	$15,212	$179,619	72.9	$66,648	$46,243	$16,229	$28,497
	4 mos.	171	1,020,457	1,150	1,063,854	156,363	131,637	44,808	311,739	62,377	706,758	66.4	357,096	275,466	152,400	108,208
Atchison, Topeka & Santa Fe	Apr.	9,422	11,701,141	2,960,856	16,176,768	3,383,987	3,328,274	398,374	4,956,163	408,016	12,441,217	76.9	3,735,551	2,575,456	2,620,830	2,232,339
	4 mos.	9,398	45,973,892	13,064,411	64,224,587	9,599,257	13,027,587	1,679,368	20,280,120	1,583,648	46,006,324	71.6	18,218,263	12,910,256	12,861,320	10,944,989
Gulf, Colorado & Santa Fe	Apr.	1,944	2,097,074	214,846	2,453,758	687,257	577,308	55,361	951,099	72,902	2,341,002	95.4	112,756	33,816	—119,111	—119,452
	4 mos.	1,944	10,574,116	896,212	12,001,272	2,233,569	2,492,786	218,606	4,243,473	267,737	9,451,516	78.8	2,549,756	2,211,008	1,432,821	295,514
Panhandle & Santa Fe	Apr.	954	901,442	118,092	1,103,254	287,722	250,041	11,703	426,395	27,464	964,431	87.4	138,823	122,375	22,411	238,927
	4 mos.	954	4,722,653	555,359	5,616,526	870,027	1,169,039	47,305	2,051,453	108,899	4,167,078	74.2	1,449,448	1,283,690	766,945	1,120,247
Atlanta & West Point	Apr.	93	173,232	59,190	267,465	41,199	44,970	11,808	95,088	17,103	214,632	80.2	52,833	35,279	19,831	38,484
	4 mos.	93	663,448	248,913	1,037,604	116,432	176,697	47,660	379,540	56,696	796,876	76.8	240,728	172,848	114,834	117,883
Western of Alabama	Apr.	133	178,929	56,095	262,468	35,208	53,423	12,171	83,167	16,572	204,415	77.9	58,053	44,151	44,272	73,746
	4 mos.	133	711,547	232,252	1,043,484	153,610	216,736	49,726	330,017	53,505	821,100	78.7	222,384	165,788	169,925	264,436
Atlanta, Birmingham & Coast	Apr.	639	375,227	29,248	445,922	98,789	88,142	28,090	170,269	17,341	413,232	92.7	32,690	18,145	2	4,837
	4 mos.	639	1,496,498	127,000	1,785,290	434,529	339,001	112,035	701,132	74,092	1,707,093	95.6	78,197	20,679	—43,482	97,844
Atlantic Coast Line	Apr.	5,033	5,999,567	1,445,797	8,119,051	1,017,372	1,324,278	155,567	2,703,562	180,360	5,458,543	67.2	2,660,508	2,007,440	1,923,389	1,772,774
	4 mos.	5,009	22,650,611	6,972,788	32,006,890	4,239,625	5,678,513	643,782	10,905,901	716,893	22,454,610	70.2	9,552,280	7,389,035	7,082,457	9,579,310
Charleston & Western Carolina	Apr.	342	317,374	16,155	349,176	77,744	44,819	7,471	120,891	6,207	257,132	73.6	92,044	70,419	58,142	52,437
	4 mos.	342	1,198,832	68,280	1,317,536	334,312	177,335	28,516	482,399	24,507	1,047,069	79.5	270,467	184,092	162,113	249,788
Baltimore & Ohio	Apr.	5,322	16,386,903	2,101,255	19,941,262	2,480,293	4,311,330	452,995	6,830,657	637,734	14,901,711	74.7	5,039,551	3,948,121	3,694,022	3,315,363
	4 mos.	5,320	65,674,739	7,937,265	78,593,137	9,471,520	17,588,873	1,784,911	28,816,956	2,476,149	60,841,957	77.4	17,751,180	13,592,534	13,000,843	11,501,149
Baltimore & Ohio Chicago Term.	Apr.	75	.....	.....	315,596	35,531	34,163	2,137	155,118	15,994	245,914	77.9	69,682	8,967	113,125	87,177
	4 mos.	75	.....	.....	1,239,349	149,702	164,307	9,104	662,031	62,350	1,068,826	86.2	170,523	—30,033	357,509	377,386
Staten Island Rapid Transit	Apr.	23	118,693	118,568	271,671	43,595	19,031	2,033	110,555	15,526	190,740	70.2	80,931	43,978	6,244	1,936
	4 mos.	23	415,163	449,696	968,970	153,298	86,850	8,223	432,939	59,962	741,272	76.5	227,698	139,720	—7,363	—43,803
Bangor & Aroostook	Apr.	613	669,094	72,307	769,423	114,772	126,633	5,144	165,387	23,315	437,884	56.9	331,539	266,780	265,486	173,112
	4 mos.	613	2,855,767	322,113	3,284,675	439,528	501,022	20,272	776,305	94,884	1,843,745	56.1	1,440,930	1,164,693	1,208,215	788,367
Belt Ry. Co. of Chicago	Apr.	32	.....	.....	600,369	36,620	62,739	3,357	256,933	9,990	369,639	61.6	230,730	180,999	141,479	164,407
	4 mos.	32	.....	.....	2,353,182	153,574	241,835	13,848	1,079,903	39,690	1,528,850	65.0	824,332	635,344	557,621	650,796
Bessemer & Lake Erie	Apr.	228	731,402	11,169	762,574	150,583	307,775	15,100	273,042	33,413	753,459	98.8	9,115	—19,985	10,520	169,756
	4 mos.	228	3,305,865	50,331	3,437,893	359,239	1,250,576	57,729	1,180,186	132,272	2,900,856	84.4	537,037	389,579	595,158	270,179
Bingham & Garfield	Apr.	33	37,286	.....	38,427	6,829	7,702	1,449	9,604	5,281	31,013	80.7	7,414	—699	16,595	12,774
	4 mos.	33	169,283	.....	174,595	32,606	36,051	6,041	42,302	20,246	137,772	78.9	36,823	5,833	72,943	60,041
Boston & Maine	Apr.	2,111	4,145,264	1,358,800	6,286,193	714,140	1,353,226	80,143	2,440,010	222,507	4,823,537	76.7	1,462,656	1,166,422	926,140	1,177,102
	4 mos.	2,111	16,087,257	6,099,917	25,052,034	2,678,482	5,239,010	306,161	10,270,475	904,089	19,455,489	77.7	5,596,545	4,405,095	3,463,915	3,900,266
Brooklyn Eastern District Terminal	Apr.	9	117,635	.....	123,460	13,722	13,932	1,634	44,405	6,241	79,934	64.7	43,526	35,365	35,365	40,185
	4 mos.	9	462,721	.....	486,690	34,203	50,220	3,427	185,691	24,065	297,606	61.2	189,084	159,547	159,547	172,450
Buffalo & Susquehanna R. R. Corp.	Apr.	253	112,512	1,671	118,905	28,967	49,521	1,899	39,268	9,029	128,684	108.2	—9,779	—11,879	3,449	—3,611
	4 mos.	253	521,270	9,442	552,355	111,414	210,010	6,978	188,854	32,782	550,038	99.6	2,317	—6,083	68,095	611
Buffalo, Rochester & Pittsburgh	Apr.	601	1,205,459	89,180	1,348,466	149,272	496,052	28,756	552,007	45,394	1,274,452	94.5	74,014	23,893	51,847	213,077
	4 mos.	601	5,593,365	374,141	6,162,997	555,320	2,023,294	116,827	2,348,832	180,755	5,235,393	84.9	927,604	727,322	819,716	1,040,117
Canadian Pacific Lines in Maine	Apr.	233	191,206	37,597	241,478	117,919	46,028	5,305	102,352	2,714	274,318	113.6	—32,840	—46,140	—67,845	38,390
	4 mos.	233	1,067,214	154,367	1,272,034	199,350	246,875	21,793	531,379	15,102	1,014,499	79.8	257,535	204,335	119,288	197,002
Canadian Pacific Lines in Vermont	Apr.	85	107,739	28,960	158,842	60,285	33,336	2,118	99,626	2,025	197,390	124.3	—38,548	—43,298	—43,747	.....
	4 mos.	85	458,959	129,686	673,917	112,424	133,765	8,602	420,294	10,143	685,228	101.7	—11,311	—30,311	—32,107	.....
Central of Georgia	Apr.	1,911	1,741,031	371,732	2,321,358	301,968	423,875	74,965	879,719	106,118	1,793,375	77.3	527,983	410,321	389,111	370,248
	4 mos.	1,911	7,122,685	1,616,828	9,566,129	1,158,802	1,689,801	303,388	3,570,562	420,173	7,180,939	75.1	2,385,190	1,878,951	1,751,635	1,734,482
Central New Jersey	Apr.	690	4,014,822	669,160	5,013,611	470,978	1,111,415	42,252	1,915,329	124,176	3,688,097	73.6	1,325,514	1,178,961	1,059,590	1,102,027
	4 mos.	690	14,403,399	2,659,497	18,277,800	1,852,821	4,255,545	170,891	7,794,675	492,634	14,662,718	80.2	3,615,082	2,807,698	2,254,342	1,778,085
Central Vermont	Apr.	433	565,539	99,138	737,980	155,170	110,529	18,990	317,300	23,668	621,752	84.3	116,228	96,672	67,050	136,782
	4 mos.	433	2,043,650	419,892	2,727,353	402,547	472,179	74,129	1,294,112	96,127	2,340,044	85.8	387,309	310,189	236,749	339,099
Chesapeake & Ohio	Apr.	2,650	9,699,296	741,854	10,964,860	1,702,348	2,574,114	127,547	2,897,693	271,563	7,604,875	69.4	3,359,985	2,649,710	2,797,201	2,099,964
	4 mos.	2,650	39,551,554	2,798,578	44,123,284	6,281,562	10,338,814	498,152	11,972,210	1,073,689	30,286,398	68.6	13,836,886	10,997,148	11,573,271	8,939,109
Chicago & Alton	Apr.	1,049	1,319,541	491,316	2,038,124	265,677	515,789	80,493	851,126	61,290	1,787,771	87.7	250,353	144,605	—12,947	170,708
	4 mos.	1,054	6,604,617	2,017,189	9,461,232	926,494	2,090,976	300,509	3,701,075	280,509	7,356,195	77.8	2,105,037	1,681,080	974,410	769,355
Chicago & Eastern Illinois	Apr.	945	1,472,147	323,958	1,977,584	265,726	438,111	85,243	823,940	69,952	1,697,566	85.8	280,018	164,957	57,517	—87,360
	4 mos.	945	7,290,323	1,335,082	9,291,575	1,011,019	2,209,589	330,048	3,684,451	282,555	7,576,616	81.5	1,714,959	1,252,785	774,274	339,826
Chicago & Illinois Midland	Apr.	133	71,786	10,185	86,291	57,863	54,389	8,031	44,891	14,803	179,977	208.6	—93,686	—100,583	—109,191	37,801
	4 mos.	133	714,929	45,845	779,983	129,874	201,787	29,544	245,991	30,823	658,019	84.4	121,964	93,019	70,920	202,567
Chicago & North Western	Apr.	8,463	7,643,534	1,970,106	10,918,114	2,016,637	2,111,816	194,673	4,462,016	357,123	9,188,586	84.2	1,729,528	927,210	722,901	997,027
	4 mos.	8,463	31,800,647	7,916,269	44,545,066	5,866,903	9,924,479	817,831	18,610,470	1,399,473	36,828,093	82.7	7,716,973	4,505,502	3,649,631	4,620,907

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
Chicago, Burlington & Quincy	Apr.	9,391	$8,135,899	$1,668,478	$11,481,672	$1,995,065	$1,982,316	$256,741	$4,093,664	$371,367	$8,730,053	76.0	$2,751,619	$1,827,548	$1,453,305	$2,150,993
	4 mos.	9,391	36,619,645	6,666,277	48,304,900	5,356,636	8,381,377	1,005,741	17,822,552	1,446,392	34,310,362	71.0	13,994,538	10,008,202	8,748,199	8,785,694
Chicago Great Western	Apr.	1,496	1,478,676	268,192	1,911,618	339,137	380,210	74,902	788,439	57,903	1,650,381	86.3	261,237	182,059	41,588	65,567
	4 mos.	1,496	5,892,338	1,075,794	7,580,783	878,574	1,535,066	298,674	3,244,395	229,827	6,229,491	82.2	1,351,292	1,012,709	457,359	524,131
Chicago, Indianapolis & Louisville	Apr.	650	1,100,608	217,171	1,471,008	149,287	331,540	37,293	536,593	35,789	1,103,601	75.0	367,407	291,324	197,921	175,373
	4 mos.	650	4,652,021	802,514	6,028,289	551,941	1,348,362	154,148	2,292,650	146,398	4,550,277	75.5	1,478,012	1,200,843	781,874	775,918
Chicago, Milwaukee & St. Paul	Apr.	11,205	9,167,900	1,462,414	11,935,832	2,515,036	2,977,501	295,125	4,673,619	377,782	10,886,401	91.2	1,049,431	297,126	—141,055	448,169
	4 mos.	11,202	37,999,092	5,690,981	48,527,193	6,537,316	12,056,291	1,195,391	19,617,953	1,552,510	41,194,835	84.9	7,332,358	4,321,417	2,643,330	3,675,190
Chicago River & Indiana	Apr.	19	.....	.....	557,776	64,259	82,591	820	221,596	22,621	391,887	70.3	165,889	130,135	234,707	239,757
	4 mos.	19	.....	.....	2,257,410	218,389	315,161	3,561	897,163	71,257	1,505,531	66.7	751,879	590,650	1,045,173	1,014,758
Chicago, Rock Island & Pacific	Apr.	7,561	7,631,065	1,826,772	10,358,282	1,461,587	2,274,292	224,370	4,043,894	317,364	8,368,828	80.8	1,989,454	1,350,754	844,876	452,580
	4 mos.	7,561	31,843,229	7,256,600	42,665,155	5,542,468	9,069,523	906,167	16,471,101	1,277,079	33,367,438	78.2	9,297,717	6,744,611	5,032,578	2,848,908
Chicago, Rock Island & Gulf	Apr.	458	502,954	66,072	626,999	82,441	89,258	20,077	236,922	17,366	446,562	71.2	180,437	154,028	112,171	—573
	4 mos.	458	2,036,932	334,443	2,548,365	313,585	283,898	78,803	918,906	69,137	1,625,199	63.8	923,166	817,256	703,711	201,359
Chic., St. Paul, Minn. & Omaha	Apr.	1,746	1,414,263	391,006	1,974,283	237,944	393,209	32,052	875,646	80,348	1,627,455	82.4	346,828	240,147	137,427	173,267
	4 mos.	1,746	5,956,334	1,583,207	8,176,421	1,026,374	1,659,301	134,453	3,708,805	309,401	6,873,982	84.1	1,302,439	891,579	626,394	709,157
Cincinnati, Indianapolis & Western	Apr.	347	364,220	22,652	413,418	89,982	111,169	15,429	174,306	18,451	410,669	99.3	2,749	—15,251	—60,238	—16,220
	4 mos.	347	1,560,597	98,598	1,757,629	271,767	416,948	62,824	721,747	66,754	1,545,808	88.0	211,821	139,821	—39,097	43,163
Clinchfield Railroad	Apr.	309	649,608	23,348	687,136	94,873	163,921	23,280	146,226	19,075	447,280	65.1	239,856	164,845	287,486	234,392
	4 mos.	309	2,621,896	101,131	2,772,869	276,242	697,145	92,188	584,539	77,464	1,726,857	62.3	1,046,012	746,001	1,194,368	1,154,782
Colorado & Southern	Apr.	1,054	775,535	111,472	965,389	192,143	248,520	16,414	369,539	44,750	878,236	91.0	87,153	23,395	20,762	156,854
	4 mos.	1,054	3,403,577	412,977	4,139,825	763,403	992,865	59,980	1,525,132	174,951	3,543,880	85.6	595,945	341,348	326,196	438,448
Ft. Worth & Denver City	Apr.	491	659,504	189,405	918,822	227,299	182,094	20,057	298,557	39,148	762,573	83.0	156,249	83,103	81,974	204,365
	4 mos.	491	3,222,072	865,963	4,355,606	808,996	718,036	70,844	1,321,719	154,714	3,096,095	71.1	1,259,511	966,032	945,325	961,173
Wichita Valley	Apr.	271	106,181	14,229	128,781	29,762	9,782	48	41,932	1,788	83,141	64.6	45,640	35,927	16,079	16,868
	4 mos.	271	598,331	70,634	699,258	82,245	43,605	118	194,515	7,527	327,535	46.8	371,723	332,751	248,537	113,291
Columbus & Greenville	Apr.	167	111,721	25,204	143,990	44,028	19,637	3,958	50,291	10,913	128,827	89.5	15,163	13,963	3,499	111
	4 mos.	167	490,623	95,371	608,132	152,346	76,489	14 331	219,630	53,888	516,684	85.0	91,448	86,321	29,731	18,468
Conemaugh & Black Lick	Apr.	23	70,420	.....	138,566	22,222	40,766	945	98,784	2,927	165,644	119.5	—27,078	—28,278	—28,745	—2,109
	4 mos.	23	255,067	.....	522,826	62,504	128,154	3,786	367,682	12,766	574,892	110.0	—52,066	—56,866	—58,054	—34,659
Delaware & Hudson	Apr.	881	2,987,279	230,873	3,419,217	436,784	949,229	52,219	1,250,629	141,347	2,840,844	83.1	578,373	461,044	401,055	1,040,846
	4 mos.	881	11,521,536	1,032,654	13,473,431	1,758,081	3,974,393	202,264	5,202,755	568,177	11,786,447	87.5	1,686,984	1,218,629	1,059,357	1,331,048
Delaware, Lackawanna & Western	Apr.	999	5,576,092	1,002,385	7,417,526	711,661	1,216,494	138,924	2,746,042	186,078	5,050,594	68.1	2,366,932	1,701,530	1,730,884	1,722,989
	4 mos.	999	19,253,782	3,982,395	26,397,084	2,656,370	5,174,570	523,616	11,282,698	720,902	20,563,280	77.9	5,833,804	3,696,722	3,786,955	4,048,374
Denver & Rio Grande Western	Apr.	2,535	1,875,131	286,330	2,344,023	563,728	502,219	51,796	699,554	89,409	1,933,661	82.5	410,362	225,247	289,136	410,785
	4 mos.	2,535	7,964,337	1,136,218	9,764,207	1,893,807	2,017,503	218,421	3,031,480	348,795	7,614,162	78.0	2,150,045	1,409,538	1,684,232	1,866,111
Denver & Salt Lake	Apr.	255	237,662	28,754	283,933	83,880	113,457	1,922	66,594	7,919	273,389	96.3	10,544	4,544	12,261	14,934
	4 mos.	255	1,009,036	111,693	1,193,470	256,415	460,366	6,416	281,775	34,165	1,038,754	87.0	154,716	130,647	151,409	117,894
Detroit & Mackinac	Apr.	375	116,138	13,020	139,837	18,687	29,124	1,944	43,353	5,745	98,825	70.6	41,012	31,233	34,891	5,452
	4 mos.	375	363,909	61,649	466,583	64,646	114,573	7,698	189,901	22,487	399,039	85.6	67,544	28,425	40,620	122
Detroit & Toledo Shore Line	Apr.	50	386,430	.....	390,735	75,246	33,747	3,613	98,146	6,392	217,144	55.6	173,591	143,606	64,463	94,697
	4 mos.	50	1,877,368	.....	1,901,423	162,567	140,328	14,038	452,061	27,420	796,414	41.9	1,105,009	990,356	568,126	440,469
Detroit Terminal	Apr.	19	.....	.....	198,347	2,140	15,674	3	89,895	4,256	111,968	56.5	86,379	58,896	89,584	37,472
	4 mos.	19	.....	.....	689,533	57,711	61,832	49	330,845	16,312	466,749	67.7	222,784	152,812	189,526	79,210
Detroit, Toledo & Ironton	Apr.	495	721,008	4,212	739,434	133,730	194,562	13,172	239,417	37,772	618,650	83.7	120,784	87,967	36,765	225,799
	4 mos.	495	3,193,408	24,711	3,270,479	431,966	650,409	55,045	1,075,754	175,972	2,388,865	73.0	881,614	719,415	466,459	942,504
Duluth & Iron Range	Apr.	274	275,811	6,115	324,016	94,602	113,525	1,755	129,159	17,902	356,963	110.2	—32,947	—69,012	—62,500	—230,611
	4 mos.	274	593,734	29,527	704,920	265,643	442,333	7,891	438,575	78,796	1,233,258	175.0	—528,338	—664,191	—661,699	—750,554
Duluth, Missabe & Northern	Apr.	305	786,796	6,866	903,485	217,929	228,757	2,901	227,114	22,584	699,243	77.4	204,242	82,398	79,059	—549,226
	4 mos.	305	1,079,564	26,447	1,258,950	585,316	876,533	12,692	652,865	93,248	2,220,401	176.4	—961,451	—1,350,326	—1,366,402	—1,772,749
Duluth, Winnipeg & Pacific	Apr.	178	158,303	14,559	179,375	34,193	53,492	4,629	64,342	7,468	165,210	92.1	14,165	6,079	2,907	47,840
	4 mos.	178	765,186	66,172	854,189	115,726	203,649	17,679	294,093	34,481	669,014	78.3	185,175	143,335	146,613	137,033
Elgin, Joliet & Eastern	Apr.	460	1,958,195	1	2,157,883	241,676	425,322	13,770	769,693	46,980	1,494,592	69.3	663,291	567,426	405,720	467,142
	4 mos.	460	8,086,569	15	8,793,811	757,163	1,634,423	56,316	2,985,764	185,126	5,608,727	63.8	3,185,084	2,790,869	2,185,543	1,847,758
Erie Railroad	Apr.	2,047	7,154,972	898,947	8,781,234	990,935	2,385,391	145,577	3,490,451	290,844	7,342,672	83.6	1,438,562	1,078,969	998,770	1,113,454
	4 mos.	2,047	27,911,464	3,583,226	34,343,047	3,950,593	9,730,822	584,375	14,400,033	1,178,929	30,013,842	87.4	4,329,205	2,800,665	2,787,931	2,721,622
Chicago & Erie	Apr.	269	938,305	45,225	1,080,633	135,986	138,111	24,191	362,493	40,621	701,397	64.9	379,236	324,422	—35,682	101,642
	4 mos.	269	4,038,528	186,614	4,600,030	509,751	624,039	94,482	1,548,851	168,220	2,944,858	64.0	1,655,172	1,436,039	95,250	333,831
New Jersey & New York	Apr.	45	32,800	93,127	132,306	16,354	16,265	1,563	74,587	3,693	112,453	85.0	19,853	16,242	—16,042	—16,065
	4 mos.	45	107,551	368,667	496,606	70,586	90,012	6,424	298,427	17,836	483,262	97.3	13,344	—1,137	—127,726	—95,612

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of: Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
N. Y., Susquehanna & Western	Apr.	134	$309,078	$47,759	$396,681	$42,843	$63,999	$4,876	$191,516	$12,107	$315,341	79.5	$81,340	$52,783	$28,261	$88,825
	4 mos.	134	1,243,050	191,893	1,605,900	189,611	280,943	20,084	866,843	51,076	1,408,534	87.7	197,366	83,085	—26,740	104,968
Evansville, Indianap's & Terre Haute	Apr.	146	58,089	4,885	69,449	28,961	18,813	2,213	43,726	8,755	102,468	147.5	—33,019	—29,355	—49,840	30,594
	4 mos.	146	755,262	24,119	806,746	101,532	114,240	9,169	294,638	28,612	548,149	67.9	258,597	231,032	84,432	163,002
Florida East Coast	Apr.	846	1,379,833	458,933	2,050,414	374,799	269,608	28,685	642,695	58,297	1,392,618	67.9	657,796	529,953	326,591	409,753
	4 mos.	846	4,921,415	2,762,747	8,567,390	1,473,497	1,216,347	143,579	2,798,147	226,325	5,969,407	69.7	2,597,983	2,087,954	1,346,865	2,780,081
Fort Smith & Western	Apr.	249	101,825	10,904	119,456	35,298	31,024	5,570	49,015	7,636	127,763	107.0	—8,307	—13,811	—26,286	—4,408
	4 mos.	249	503,630	52,646	585,950	115,471	128,837	22,676	209,941	31,180	505,735	86.3	80,215	60,640	9,212	—1,390
Galveston Wharf	Apr.	13	.....	.....	192,479	47,924	4,489	1,555	31,392	4,787	106,770	55.5	85,709	68,709	68,883	—11,771
	4 mos.	13	.....	.....	736,719	176,685	19,263	6,337	146,250	15,814	418,171	56.8	318,548	250,548	250,372	17,615
Georgia Railroad	Apr.	328	380,260	71,612	486,845	61,755	87,985	23,075	197,865	24,620	395,197	81.1	91,648	79,658	85,480	98,109
	4 mos.	328	1,498,783	276,808	1,905,411	201,328	352,855	95,616	823,834	94,561	1,565,953	82.2	339,458	291,507	331,238	361,268
Georgia & Florida	Apr.	445	117,797	13,482	138,917	26,645	19,683	10,037	53,814	8,430	118,832	85.5	20,085	12,384	10,302	9,064
	4 mos.	445	559,279	63,559	654,031	118,925	89,386	39,364	233,412	32,643	514,626	78.7	139,405	108,504	90,258	76,532
Grand Trunk Western	Apr.	347	1,599,480	153,856	1,835,166	234,502	365,537	41,440	611,907	67,212	1,326,283	72.3	508,883	425,113	311,915	287,213
	4 mos.	347	5,817,045	631,333	6,770,122	620,823	1,504,106	157,782	2,402,605	250,815	4,957,186	73.2	1,812,936	1,476,925	1,052,290	935,969
Atlantic & St. Lawrence	Apr.	166	141,562	33,573	201,143	28,424	32,035	6,220	95,880	9,710	173,720	86.4	27,423	14,473	—59,865	—41,728
	4 mos.	166	743,632	127,639	952,215	111,154	160,312	23,628	469,258	34,854	804,986	84.5	147,229	95,429	—189,158	—208,339
Chic., Det. & Canada Gr. Tr. Jct.	Apr.	59	212,998	1,072	249,075	50,708	16,440	4,542	94,386	4,453	170,529	68.5	78,546	68,286	31,663	95,887
	4 mos.	59	1,137,491	4,996	1,300,915	113,814	74,507	17,541	415,473	19,868	641,144	49.3	659,771	618,731	463,847	475,352
Det., Grand Haven & Milwaukee	Apr.	189	660,881	28,656	728,339	58,338	60,887	12,925	267,888	19,639	419,287	57.6	309,052	296,105	190,797	106,364
	4 mos.	189	2,283,317	116,023	2,578,798	207,524	238,395	49,577	1,020,706	73,342	1,586,710	61.5	992,088	939,637	533,109	370,192
Great Northern	Apr.	8,164	6,207,351	925,944	7,900,224	1,410,369	1,410,205	228,286	2,736,384	217,751	6,071,120	76.8	1,829,104	1,061,626	1,144,022	699,159
	4 mos.	8,164	22,356,049	3,904,358	29,104,893	3,924,843	5,976,777	832,056	11,349,336	898,239	23,238,647	79.8	5,866,246	2,960,227	3,142,622	3,328,300
Green Bay & Western	Apr.	234	136,849	6,769	150,773	22,079	18,778	4,952	48,935	2,533	97,277	64.5	53,496	45,496	43,961	18,321
	4 mos.	234	482,508	31,883	541,137	80,228	81,651	18,192	204,930	11,358	396,359	73.2	144,778	112,778	104,806	115,984
Gulf & Ship Island	Apr.	307	244,248	36,022	304,746	131,849	57,557	6,067	154,059	8,565	371,533	121.9	—66,787	—90,625	—97,701	—167,239
	4 mos.	307	1,033,126	179,394	1,315,240	486,098	235,648	23,108	538,813	33,611	1,332,581	101.3	—17,341	—112,710	—162,111	—338,542
Gulf, Mobile & Northern	Apr.	611	529,862	28,308	579,246	104,087	87,540	28,294	162,293	25,397	407,787	70.40	171,459	131,327	110,462	110,970
	4 mos	611	1,997,879	120,649	2,201,914	390,860	341,398	112,023	619,868	100,360	1,565,463	71.10	636,451	487,344	414,631	453,407
Hocking Valley	Apr.	348	1,505,337	62,445	1,746,235	186,366	371,208	15,939	483,386	44,795	1,101,544	63.1	644,691	527,941	353,223	80,071
	4 mos.	348	5,440,568	265,412	6,142,890	673,752	1,518,141	64,751	1,821,785	175,882	4,254,117	69.3	1,888,773	1,438,546	1,343,588	967,929
Illinois Central	Apr.	4,874	9,405,523	1,875,621	12,626,784	1,511,566	2,893,243	242,827	4,548,327	372,543	9,654,292	76.5	2,972,492	2,182,741	2,092,440	1,778,684
	4 mos.	4,874	39,346,287	8,084,504	51,265,738	5,384,779	11,302,012	1,089,474	18,882,287	1,402,287	38,334,786	74.8	12,930,952	9,401,654	9,020,773	8,580,540
Yazoo & Mississippi Valley	Apr.	1,710	1,717,494	306,599	2,169,914	750,086	432,795	48,469	835,959	75,415	2,150,738	99.1	19,176	—176,466	—241,450	116,675
	4 mos.	1,710	7,011,843	1,306,356	8,877,259	1,907,085	1,617,558	197,386	3,434,427	289,862	7,465,710	84.1	1,411,549	694,924	432,653	872,021
Illinois Central System	Apr.	6,584	11,134,440	2,185,981	14,811,882	2,261,652	3,332,800	291,296	5,394,947	448,020	11,822,515	79.8	2,989,367	1,999,298	1,855,247	1,904,272
	4 mos.	6,584	46,399,150	9,406,836	60,199,994	7,291,864	12,942,541	1,286,860	22,352,034	1,692,446	45,859,084	76.2	14,340,910	10,075,844	9,480,883	9,477,706
Kansas City, Mexico & Orient	Apr.	272	261,294	6,875	275,902	65,265	51,527	9,049	123,011	10,394	259,246	94.0	16,656	12,532	14,988	5,627
	4 mos.	272	897,040	23,858	953,377	265,045	206,049	33,353	406,523	53,200	963,953	101.1	—10,576	—27,271	19,685	10,323
Kans. City, Mex. & Orient of Tex.	Apr.	465	544,559	16,902	578,463	155,720	80,231	10,126	197,045	11,519	454,529	78.6	123,934	116,926	16,550	4,847
	4 mos.	465	1,881,971	76,657	2,019,717	501,105	296,623	37,886	743,058	58,300	1,636,052	81.0	383,665	355,591	59,961	31,980
Kansas City Southern	Apr.	784	1,295,001	97,543	1,541,684	208,039	275,004	53,844	486,480	91,811	1,112,405	72.2	429,279	318,760	268,534	377,640
	4 mos.	784	4,947,869	408,930	5,946,932	655,367	1,005,323	201,143	1,938,990	319,041	4,115,856	69.2	1,831,076	1,388,919	1,214,822	1,440,966
Texarkana & Ft. Smith	Apr.	81	214,934	8,968	245,063	30,903	25,770	6,912	72,815	10,634	148,392	60.6	96,671	81,625	63,571	89,470
	4 mos.	81	850,960	37,310	957,321	120,862	83,958	23,972	285,966	*1,251	560,131	58.5	397,190	337,233	221,175	286,455
Kansas, Oklahoma & Gulf	Apr.	326	216,418	4,599	227,784	29,239	15,155	10,195	65,709	7,444	126,825	55.7	100,959	91,345	73,411	—484,269
	4 mos.	326	856,723	21,030	903,184	471,607	104,365	37,015	284,914	27,983	915,842	101.4	—12,658	—51,476	—125,295	—478,355
Lake Superior & Ishpeming	Apr.	160	109,018	2,798	124,868	27,898	29,537	475	39,663	4,939	102,513	82.1	22,356	3,829	697	—40,293
	4 mos.	160	279,758	15,295	320,195	106,132	111,666	2,252	141,168	19,924	381,142	119.0	—60,947	—114,273	—125,262	—162,401
Lake Terminal	Apr.	13	.....	.....	74,891	18,402	20,533	.....	56,769	1,858	97,562	130.3	—22,671	—27,871	—34,023	—5,931
	4 mos.	13	.....	.....	347,681	57,099	82,668	.....	220,222	7,280	367,269	105.6	—19,588	—43,414	—45,087	—22,185
Lehigh & Hudson River	Apr.	96	252,701	1,646	266,279	30,538	45,812	2,145	94,256	9,258	181,982	68.3	84,297	68,228	48,949	56,806
	4 mos.	96	1,008,847	7,581	1,074,737	113,507	177,530	7,961	410,387	38,402	747,760	69.6	326,977	265,759	178,545	165,514
Lehigh & New England	Apr.	216	513,939	1,188	523,289	43,113	98,221	7,895	159,223	16,789	325,225	62.2	198,064	169,225	166,445	153,183
	4 mos.	216	1,663,447	5,119	1,697,337	147,985	393,338	25,322	592,530	67,099	1,226,258	72.2	471,079	397,883	399,482	274,496
Lehigh Valley	Apr.	1,363	5,234,489	617,741	6,363,684	702,931	1,346,669	135,105	2,553,742	142,156	4,914,238	77.2	1,449,446	1,123,324	941,069	1,500,649
	4 mos.	1,363	19,618,533	2,287,811	23,858,092	2,431,653	5,560,321	536,588	10,444,976	619,811	19,710,002	82.6	4,148,090	3,074,706	2,202,595	2,288,895
Louisiana & Arkansas	Apr.	302	247,396	14,601	276,334	55,699	61,734	11,232	92,406	11,499	232,318	84.1	44,016	20,850	12,610	80,566
	4 mos.	302	1,149,814	59,230	1,246,974	239,973	256,641	46,307	395,330	46,723	984,329	78.9	262,645	156,793	107,921	277,559

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
Louisiana Ry. & Navigation Co.	Apr.	337	$240,885	$10,733	$267,462	$70,899	$36,382	$10,998	$122,506	$9,861	$250,165	93.5	$17,297	—$4,801	—$34,743	—$59,084
	4 mos.	337	1,034,341	54,430	1,153,876	255,910	160,584	46,490	532,072	39,891	1,026,025	88.8	127,857	36,438	—91,667	—194,552
Louisiana Ry. & Nav. Co. of Tex.	Apr.	206	70,343	3,733	77,684	21,021	15,714	3,371	37,937	6,184	84,227	108.4	—6,543	—10,544	—24,065	—12,588
	4 mos.	206	330,097	17,062	362,454	93,334	55,961	11,351	168,384	24,927	353,790	102.5	8,664	—7,369	—64,663	—51,466
Louisville & Nashville	Apr.	5,064	9,832,620	1,588,989	12,162,313	1,821,023	2,813,667	231,643	4,195,592	339,131	9,444,092	77.7	2,718,221	2,126,429	2,030,077	1,759,044
	4 mos.	5,060	38,222,178	6,711,917	47,558,432	7,247,506	11,195,553	1,053,378	16,925,936	1,334,219	37,923,087	79.7	9,635,345	7,406,142	7,158,423	8,230,313
Louisville, Henderson & St. Louis	Apr.	199	249,238	52,922	321,188	59,904	45,147	7,629	110,146	11,342	234,168	72.9	87,020	67,328	57,828	12,667
	4 mos.	199	1,081,027	199,551	1,346,631	220,463	200,999	28,755	436,423	45,799	932,439	69.2	414,192	326,242	294,370	273,465
Maine Central	Apr.	1,121	1,153,704	261,322	1,561,093	282,911	348,240	14,911	649,472	67,186	1,362,076	87.3	199,017	85,001	48,904	183,609
	4 mos.	1,121	5,231,172	1,225,960	7,029,500	1,037,074	1,310,790	54,326	2,808,625	241,525	5,450,832	77.5	1,578,668	1,122,907	907,442	853,160
Midland Valley	Apr.	364	261,041	30,849	302,974	57,737	41,892	7,274	87,542	15,935	210,378	69.4	92,596	72,752	55,670	118,817
	4 mos.	364	1,086,456	122,600	1,256,542	178,312	148,534	29,033	345,553	63,921	765,316	60.9	491,226	410,338	340,938	437,364
Minneapolis & St. Louis	Apr.	1,627	858,939	103,334	1,029,490	318,194	289,132	36,787	501,360	54,625	1,199,302	116.5	—169,812	—232,946	—277,353	—196,028
	4 mos.	1,627	3,718,365	392,742	4,350,758	687,498	1,104,493	143,187	2,171,814	188,856	4,290,258	98.6	60,500	—144,162	—324,880	—54,966
Minneapolis, St. Paul & S. S. Marie	Apr.	4,396	2,824,757	410,511	3,501,081	548,926	702,985	74,290	1,373,690	115,704	2,827,664	80.8	673,417	452,511	351,616	339,847
	4 mos.	4,396	10,618,100	1,778,823	13,406,525	1,834,718	2,900,850	280,504	5,670,351	455,726	11,190,758	83.5	2,215,767	1,321,934	902,894	908,833
Duluth, South Shore & Atlantic	Apr.	589	329,268	60,554	425,328	49,071	67,874	7,014	181,863	10,843	321,546	75.6	103,782	74,782	60,623	52,539
	4 mos.	589	1,248,311	279,394	1,656,647	210,662	273,601	31,643	736,101	47,620	1,318,366	79.6	338,281	222,266	154,855	135,540
Spokane International	Apr.	165	78,469	10,027	94,511	14,835	8,538	3,504	30,977	6,615	65,667	69.5	28,844	23,486	15,184	23,772
	4 mos.	165	323,237	41,988	388,247	65,531	33,391	14,216	134,346	26,010	277,751	71.5	110,496	88,963	60,069	92,945
Mississippi Central	Apr.	161	117,481	8,139	130,095	17,774	28,544	7,845	35,516	8,439	98,118	75.4	31,977	24,565	26,126	27,231
	4 mos.	161	498,212	33,695	549,335	77,785	104,402	32,969	147,768	31,169	394,091	71.7	155,244	119,609	127,468	131,153
Missouri & North Arkansas	Apr.	364	95,010	13,125	116,042	41,211	14,578	9,811	51,956	6,878	124,434	107.2	—8,392	—11,012	—22,063	—25,607
	4 mos.	364	455,011	59,865	548,086	142,703	65,458	39,115	214,734	28,904	490,914	89.5	57,172	47,279	6,662	—73,739
Missouri-Kansas-Texas	Apr.	1,799	2,265,046	325,745	2,821,354	445,707	656,504	68,665	826,545	99,885	2,097,347	74.3	724,007	547,852	535,438	656,817
	4 mos.	1,799	9,248,788	1,356,876	11,430,058	1,238,878	2,631,356	265,362	3,109,185	388,194	7,649,613	66.9	3,780,445	2,977,909	3,039,174	2,895,396
Missouri-Kansas-Texas of Texas	Apr.	1,389	1,252,907	319,650	1,730,817	185,072	236,071	50,323	712,026	66,555	1,260,983	72.9	469,834	417,355	236,088	91,333
	4 mos.	1,389	5,315,368	1,296,508	7,197,494	961,933	1,076,788	203,887	2,901,100	265,119	5,459,161	75.8	1,738,333	1,528,483	838,069	598,111
Missouri Pacific	Apr.	7,354	6,867,869	1,072,259	8,812,107	2,004,498	1,820,109	276,167	3,723,086	365,149	8,217,411	93.3	594,696	211,339	—155,089	1,398,576
	4 mos.	7,351	32,574,195	4,852,694	40,699,328	6,146,767	8,200,169	1,138,004	15,589,057	1,419,413	32,646,313	80.2	8,053,015	6,306,785	4,770,090	5,948,778
Gulf Coast Lines	Apr.	973	1,122,384	158,275	1,394,070	218,183	235,939	39,686	470,660	56,365	1,017,768	73.01	376,302	310,221	205,697	439,092
	4 mos.	973	4,791,439	706,763	5,824,406	1,010,491	920,561	156,755	1,827,684	218,637	4,126,955	70.86	1,697,451	1,437,142	1,010,569	1,106,451
International-Great Northern	Apr.	1,159	1,183,960	169,811	1,504,149	240,645	249,338	37,152	657,260	62,468	1,231,788	81.89	272,361	231,696	133,175	106,228
	4 mos.	1,159	4,750,819	789,424	6,153,293	1,013,844	1,087,440	138,736	2,582,304	243,133	5,016,515	81.53	1,136,778	968,726	559,988	398,138
San Antonio Uvalde & Gulf	Apr.	318	147,282	19,009	182,523	39,335	21,948	5,062	56,279	6,237	129,272	70.8	53,251	49,587	20,371	40,957
	4 mos.	318	541,581	92,138	690,226	153,447	87,635	19,474	200,427	23,411	487,046	70.6	203,180	188,505	80,623	107,718
Texas & Pacific	Apr.	1,954	2,429,675	456,147	3,105,607	516,768	723,041	72,119	1,115,415	100,194	2,543,803	81.9	561,804	406,287	248,685	189,852
	4 mos.	1,954	9,819,000	1,903,853	12,538,427	2,077,007	2,368,474	285,094	4,496,366	398,799	9,647,058	76.9	2,891,369	2,264,990	1,693,482	1,327,175
Mobile & Ohio	Apr.	1,161	1,364,853	92,845	1,550,180	230,322	293,434	53,278	584,455	50,655	1,212,113	78.2	338,067	257,757	195,727	272,453
	4 mos.	1,161	5,207,006	419,589	5,956,739	897,866	1,064,210	212,346	2,226,396	189,558	4,590,611	77.1	1,366,128	1,037,727	859,553	1,181,223
Monongahela	Apr.	169	569,863	25,920	601,687	75,000	65,000	1,150	154,388	10,358	305,512	50.8	296,175	270,167	168,010	112,503
	4 mos.	169	2,528,850	109,782	2,662,661	300,000	260,000	4,320	724,531	39,687	1,327,408	49.9	1,335,253	1,207,599	810,307	672,633
Monongahela Connecting	Apr.	7	.....	.....	185,383	17,939	36,609	375	75,425	2,904	133,252	71.9	52,131	41,453	38,446	32,281
	4 mos.	7	.....	.....	725,040	68,321	133,606	1,498	313,316	13,048	529,789	73.1	195,251	156,197	142,801	150,909
Montour	Apr.	57	66,996	230	67,690	27,531	41,695	1,337	18,328	10,260	99,151	146.5	—31,461	—32,856	5,998	2,032
	4 mos.	57	460,560	1,588	464,937	81,937	182,854	5,053	109,352	35,415	414,611	89.2	50,326	24,639	154,212	21,649
Nash., Chatt. & St. Louis	Apr.	1,259	1,487,948	324,300	1,964,618	254,938	355,534	88,762	688,601	82,758	1,474,825	75.1	489,793	417,978	434,531	255,392
	4 mos.	1,259	5,629,308	1,324,525	7,519,528	958,695	1,565,292	350,536	2,819,909	324,330	6,044,065	80.4	1,475,463	1,182,613	1,292,805	1,316,072
Nevada Northern	Apr.	165	55,507	5,928	68,986	15,064	5,403	923	14,538	4,942	41,124	59.61	27,862	20,495	22,471	33,126
	4 mos.	165	259,289	26,263	314,346	52,479	20,164	3,763	64,564	18,431	160,148	50.95	154,198	127,251	127,632	106,452
Newburgh & South Shore	Apr.	7	.....	.....	162,869	21,146	36,250	.....	64,938	4,549	126,883	77.9	35,988	22,872	20,634	35,055
	4 mos.	7	.....	.....	561,786	61,664	154,900	.....	246,632	16,594	479,790	85.4	81,996	32,022	59,439	110,937
New Orleans Great Northern	Apr.	274	219,875	23,721	249,640	46,254	40,446	8,748	70,064	10,806	176,238	70.6	73,402	58,266	37,748	35,319
	4 mos.	274	951,323	94,047	1,078,431	168,570	193,403	31,237	298,743	42,999	732,941	68.0	345,490	276,918	197,328	189,186
New York Central	Apr.	6,925	19,832,942	7,542,389	31,639,696	4,441,732	6,817,007	420,485	10,884,938	1,144,435	24,165,623	76.4	7,474,073	5,327,527	4,994,748	5,275,650
	4 mos.	6,925	79,816,543	29,987,338	125,356,078	16,271,468	26,905,933	1,605,798	46,194,386	4,807,774	97,565,963	77.8	27,790,115	19,516,427	18,113,847	19,138,400
Cincinnati Northern	Apr.	244	360,703	4,929	375,543	49,357	69,814	7,544	118,932	14,380	260,020	69.2	115,523	90,311	72,248	65,928
	4 mos.	244	1,498,853	22,475	1,548,184	171,606	294,854	26,601	512,994	47,858	1,052,050	68.0	496,134	395,650	280,334	307,743
Cleve., Cin., Chicago & St. Louis	Apr.	2,397	5,331,643	1,233,035	7,239,146	936,177	1,639,255	143,113	2,776,888	297,744	5,874,061	81.1	1,365,085	988,394	876,628	1,303,827
	4 mos.	2,397	22,716,491	4,928,121	30,094,108	3,170,676	6,664,899	578,325	11,488,563	1,128,211	23,322,724	77.5	6,771,384	5,132,565	4,757,806	5,039,867

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
Indiana Harbor Belt	Apr.	116	.....	.....	$916,099	$145,000	$132,252	$4,712	$365,273	$25,122	$670,496	73.2	$245,603	$181,956	$231,575	$176,574
	4 mos.	116	.....	.....	3,817,903	504,069	574,046	19,651	1,690,133	106,101	2,892,212	75.8	925,691	738,653	635,661	547,203
Michigan Central	Apr.	1,855	$5,302,437	$1,504,669	7,618,277	818,773	1,500,957	114,679	2,496,252	247,760	5,265,640	69.1	2,352,637	1,841,903	1,839,852	1,933,074
	4 mos.	1,855	20,100,482	5,982,224	28,957,987	2,809,083	5,509,057	489,441	9,955,539	1,076,243	20,201,637	69.8	8,756,350	6,828,539	6,698,198	7,344,189
Pittsburgh & Lake Erie	Apr.	231	2,271,112	225,186	2,582,054	333,217	917,219	29,970	854,096	86,419	2,222,245	86.1	359,809	208,610	563,049	619,828
	4 mos.	231	9,554,482	926,737	10,830,380	1,477,852	3,681,866	99,594	3,683,597	330,337	9,278,800	85.7	1,551,580	925,220	2,445,078	2,931,878
New York, Chicago & St. Louis	Apr.	1,691	4,062,238	132,840	4,346,118	503,779	898,959	120,833	1,523,339	154,831	3,204,637	73.7	1,141,481	972,034	858,046	921,119
	4 mos.	1,691	16,532,593	509,914	17,570,344	1,907,672	3,595,065	486,511	6,353,545	681,708	12,950,113	73.7	4,620,231	3,644,658	2,960,441	3,461,095
N. Y., New Haven & Hartford	Apr.	2,175	6,329,078	3,994,414	11,662,616	1,603,978	2,324,620	94,205	3,961,930	310,064	8,452,669	72.5	3,209,947	2,702,670	2,012,940	2,467,543
	4 mos.	2,175	23,812,174	15,677,689	44,453,250	5,825,902	9,196,464	355,483	16,348,175	1,311,891	33,734,608	75.9	10,718,642	8,570,127	5,900,422	7,314,776
Central New England	Apr.					Included in New York, New Haven & Hartford										
	4 mos.					Included in New York, New Haven & Hartford										
New York Connecting	Apr.	20	207,574	.....	241,470	8,741	14,038	.....	59,112	1,591	83,482	34.6	157,988	117,488	99,461	88,554
	4 mos.	20	904,683	.....	1,024,684	78,638	55,403	.....	245,035	6,606	385,682	37.6	639,002	477,002	402,784	370,773
New York, Ontario & Western	Apr.	569	744,170	98,006	1,008,570	112,534	225,118	17,864	446,532	34,834	839,746	83.3	168,824	118,647	60,005	174,247
	4 mos.	569	2,388,351	331,096	3,349,965	438,105	907,809	71,467	1,778,479	144,030	3,360,057	100.3	—10,092	—211,150	—399,630	—100,676
Norfolk & Western	Apr.	2,241	8,472,183	567,528	9,397,264	1,214,319	1,828,271	108,295	2,374,397	211,391	5,737,880	61.1	3,659,384	2,807,591	3,087,206	2,614,319
	4 mos.	2,241	33,189,134	2,289,493	36,800,234	4,925,015	7,583,537	428,731	9,905,161	834,999	23,702,329	64.4	13,097,905	9,694,434	10,610,726	11,012,850
Norfolk Southern	Apr.	931	826,792	50,771	929,844	107,288	141,250	24,478	320,462	30,083	615,538	66.2	314,306	265,702	216,284	172,699
	4 mos.	931	2,912,032	196,195	3,287,702	390,794	506,193	97,041	1,201,444	122,562	2,279,732	69.3	1,007,970	813,120	661,082	577,936
Northern Pacific	Apr.	6,668	5,612,968	845,622	7,122,931	1,490,032	1,237,941	244,523	2,493,880	247,820	5,773,722	81.1	1,349,209	680,221	1,049,015	1,320,960
	4 mos.	6,674	20,613,298	3,486,845	26,491,321	3,929,262	5,586,456	783,849	10,215,414	1,006,840	21,807,978	82.3	4,683,343	2,021,070	3,340,070	4,605,542
Northwestern Pacific	Apr.	477	272,094	144,105	464,491	89,989	79,544	5,845	200,223	20,708	396,174	85.3	68,317	27,623	18,256	35,701
	4 mos.	477	986,092	513,884	1,664,048	376,640	324,961	22,503	808,290	82,058	1,613,524	97.0	50,524	—112,372	—145,512	45,247
Pennsylvania R. R.	Apr.	10,510	38,057,399	11,980,825	55,353,643	7,297,464	11,686,944	761,975	20,155,957	1,546,114	42,151,301	76.1	13,202,342	10,578,185	9,350,011	7,228,180
	4 mos.	10,510	154,261,298	45,844,355	219,711,896	27,134,224	49,362,693	3,033,040	84,760,601	6,296,579	173,486,213	79.0	46,225,683	37,657,932	32,713,373	24,811,336
Baltimore, Ches. & Atlantic	Apr.	130	61,226	25,225	93,267	12,467	53,965	1,783	71,207	3,100	142,522	152.8	—49,255	—52,466	—53,892	—39,924
	4 mos.	130	230,152	82,100	331,906	38,901	135,743	6,183	290,054	13,083	483,964	145.8	—152,058	—153,592	—157,764	—128,418
Long Island	Apr.	401	1,073,500	1,982,307	3,282,716	578,524	563,054	27,864	1,375,420	87,571	2,645,111	80.6	637,605	485,770	304,059	302,740
	4 mos.	401	3,653,807	7,311,300	11,760,440	1,993,884	2,252,197	118,103	5,484,216	353,188	10,250,017	87.2	1,510,423	1,158,718	544,929	745,676
West Jersey & Seashore	Apr.	378	422,179	459,461	925,394	165,171	135,712	16,548	422,887	23,727	764,377	82.6	161,017	105,132	92,599	94,038
	4 mos.	378	1,622,677	1,577,569	3,359,147	598,653	667,650	59,507	1,765,589	96,951	3,189,994	95.0	169,153	133,406	91,909	98,794
Peoria & Pekin Union	Apr.	19	22,065	2,220	145,920	17,273	12,430	933	63,601	7,797	102,034	69.9	43,886	26,886	47,577	47,653
	4 mos.	19	99,077	12,594	625,382	49,812	62,744	4,048	274,563	31,192	422,359	67.5	203,023	135,023	205,362	221,419
Pere Marquette	Apr.	2,243	3,367,634	234,399	3,828,768	396,471	813,158	60,744	1,243,908	110,474	2,631,609	68.7	1,197,159	980,407	790,908	699,260
	4 mos.	2,244	12,355,468	960,015	14,114,379	1,142,516	3,125,144	233,742	4,948,428	434,649	9,923,331	70.3	4,191,048	3,399,327	2,912,233	2,834,076
Pittsburgh & Shawmut	Apr.	102	101,724	4,922	109,624	19,376	46,899	1,489	34,776	12,065	114,605	104.5	—4,981	—6,189	2,586	45,293
	4 mos.	102	526,687	22,044	557,395	79,627	192,289	7,060	170,138	36,322	485,436	87.1	71,959	67,355	101,806	170,596
Pittsburgh & West Virginia	Apr.	92	255,604	7,286	294,684	17,326	60,216	8,612	60,360	23,944	181,726	61.7	112,958	64,287	121,901	139,147
	4 mos.	92	1,565,481	25,680	1,721,374	106,792	254,248	36,365	342,079	104,404	896,779	52.1	824,595	582,065	893,899	791,913
Pittsburgh, Shawmut & Northern	Apr.	198	116,528	2,699	122,065	27,975	29,962	1,956	45,066	6,296	112,255	91.9	9,810	6,880	—1,951	5,712
	4 mos.	198	617,216	13,094	645,650	100,905	130,929	6,658	258,191	26,497	523,180	81.0	122,470	110,355	69,340	53,026
Quincy, Omaha & Kansas City	Apr.	249	37,049	15,486	59,176	34,041	7,582	796	27,346	2,516	72,227	122.1	—13,051	—18,880	—21,537	—24,117
	4 mos.	249	167,352	56,194	249,214	104,332	55,612	3,155	123,416	10,678	296,228	118.9	—47,014	—70,484	—81,133	—61,215
Reading	Apr.	1,139	7,219,103	721,053	8,386,245	1,104,106	1,698,670	84,441	2,973,523	199,455	6,063,710	72.3	2,322,535	1,787,938	1,828,452	1,883,939
	4 mos.	1,139	27,226,899	3,026,339	31,755,086	3,792,863	7,077,801	316,202	12,320,788	810,806	24,325,927	76.6	7,429,159	5,585,173	5,782,123	6,302,883
Atlantic City	Apr.	161	144,938	139,435	303,933	109,522	24,092	6,614	176,832	5,040	322,148	106.0	—18,215	—52,562	—77,096	—52,285
	4 mos.	161	524,313	450,219	1,039,814	396,615	119,692	21,296	743,930	21,108	1,303,151	125.3	—263,337	—400,431	—508,679	—355,106
Perkiomen	Apr.	41	94,891	4,039	102,178	14,244	6,418	107	48,331	1,221	70,366	68.9	31,812	27,340	20,330	27,641
	4 mos.	41	370,642	15,660	398,899	38,458	24,113	431	181,581	4,531	249,292	62.5	149,607	129,235	102,541	126,729
Port Reading	Apr.	19	181,797	.....	257,705	24,236	7,128	229	70,766	4,991	107,350	41.7	150,355	135,046	74,874	36,811
	4 mos.	19	684,034	.....	919,147	127,018	33,540	916	314,882	9,687	486,020	52.9	433,127	371,424	80,242	118,966
Richmond, Fredericksburg & Potomac	Apr.	117	561,718	399,358	1,172,292	126,182	164,178	9,110	411,469	34,512	781,212	66.6	391,080	320,727	232,412	271,994
	4 mos.	117	1,882,336	1,644,587	4,297,715	422,654	707,416	35,289	1,573,643	144,553	3,022,453	70.5	1,265,262	1,004,955	721,138	1,170,950
Rutland	Apr.	413	322,695	84,270	510,184	89,343	104,649	11,948	206,028	13,839	427,505	83.8	82,679	56,215	64,670	95,335
	4 mos.	413	1,229,463	378,764	2,017,155	336,508	431,188	42,882	855,605	58,833	1,731,081	85.8	286,074	184,890	222,328	281,251
St. Louis-San Francisco	Apr.	4,951	4,979,720	1,117,173	6,754,465	1,175,937	1,437,289	113,597	2,281,146	258,742	5,203,631	77.0	1,550,834	1,229,517	1,302,732	1,603,534
	4 mos.	4,951	20,650,958	4,565,885	27,194,421	3,601,178	5,323,433	455,053	9,304,040	976,235	19,495,863	71.7	7,698,558	6,205,258	6,512,541	6,723,080
Ft. Worth & Rio Grande	Apr.	233	74,812	13,415	99,412	27,181	22,266	3,344	52,237	5,723	110,545	111.2	—11,133	—15,190	—23,957	—32,396
	4 mos.	233	299,557	60,839	402,069	94,064	80,404	13,281	215,658	21,825	424,552	105.6	—22,483	—38,800	—70,084	—53,446
St. Louis, San Francisco & Texas	Apr.	137	184,424	12,866	201,855	34,992	30,363	5,260	60,370	8,016	138,702	68.7	63,153	60,575	36,275	8,528
	4 mos.	137	621,690	56,863	694,754	109,726	110,712	20,742	247,780	30,866	519,476	74.8	175,278	165,052	70,691	49,401
St. Louis Southwestern	Apr.	940	1,029,803	83,996	1,198,408	263,701	185,139	67,410	395,420	76,107	996,159	83.1	202,249	174,240	107,002	285,967
	4 mos.	940	4,774,336	382,301	5,447,135	880,001	880,709	249,635	1,495,358	262,545	3,803,663	69.8	1,643,472	1,444,927	1,125,426	1,295,536

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1927—CONTINUED

Name of road		Average mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net after rents.	Net after rents, 1926.
St. Louis Southwestern of Texas.	Apr.	807	$445,766	$51,473	$545,478	$176,379	$108,500	$29,740	$232,482	$34,263	$588,713	107.9	—$43,235	—$70,037	—$15,438	—$83,399
	4 mos.	807	1,889,934	200,644	2,289,613	814,028	461,707	108,806	940,152	130,715	2,466,833	107.7	—177,220	—285,235	—60,963	—51,847
Seaboard Air Line	Apr.	4,291	4,329,705	811,624	5,691,464	619,717	778,354	200,951	2,190,602	209,351	4,100,535	72.0	1,590,929	1,265,043	1,116,670	949,654
	4 mos.	4,259	16,929,233	4,262,874	23,261,676	2,852,482	3,263,074	803,292	9,071,818	815,840	17,222,180	74.0	6,039,496	4,759,747	4,090,734	4,051,838
Southern Ry.	Apr.	6,771	9,538,486	2,143,211	12,705,054	1,778,711	2,266,806	265,759	4,249,439	342,261	8,982,313	70.7	3,722,741	2,961,111	2,720,846	2,785,013
	4 mos.	6,771	36,179,277	8,825,217	48,809,804	7,051,021	9,142,048	1,050,032	16,959,656	1,364,847	35,881,788	73.5	12,928,016	9,994,544	9,249,356	10,109,775
Alabama Great Southern	Apr.	314	634,492	139,190	828,078	140,534	178,976	20,445	257,610	24,578	629,223	76.0	198,855	142,318	165,503	185,722
	4 mos.	314	2,466,341	605,735	3,282,736	555,307	655,970	81,933	1,011,687	92,376	2,426,060	73.9	856,676	641,030	736,504	820,234
Cinn., New Orleans & Tex. Pacific.	Apr.	338	1,462,582	289,956	1,860,497	307,139	361,777	44,348	538,961	52,991	1,321,946	71.1	538,551	417,873	390,787	432,261
	4 mos.	338	5,422,145	1,299,911	7,140,063	1,157,213	1,480,264	172,762	2,156,969	208,558	5,244,404	73.5	1,895,659	1,503,617	1,410,196	2,013,846
Georgia Southern & Florida	Apr.	401	262,308	102,887	398,666	83,225	86,830	13,507	168,397	12,417	369,066	92.6	29,600	7,957	—7,920	78,230
	4 mos.	401	1,097,097	409,425	1,633,119	346,728	358,435	55,558	706,395	49,407	1,532,076	93.8	101,043	18,310	—49,479	400,562
New Orleans & Northeastern	Apr.	204	358,068	71,554	466,055	72,959	96,290	12,722	154,033	15,805	356,310	76.5	109,745	66,366	28,444	75,457
	4 mos.	204	1,501,394	317,882	1,951,887	268,192	348,507	51,607	591,882	60,094	1,338,805	68.6	613,082	433,936	285,855	405,194
Northern Alabama	Apr.	110	100,772	8,170	111,583	14,540	3,813	2,648	37,905	2,760	61,587	55.2	49,996	43,746	27,187	28,793
	4 mos.	110	423,833	33,152	466,782	76,168	17,002	9,755	149,412	11,243	263,512	56.5	203,270	181,732	88,309	67,458
Southern Pacific	Apr.	8,929	12,099,754	3,213,426	16,949,268	2,546,433	3,035,983	411,667	5,639,992	616,148	12,524,521	73.9	4,424,747	2,985,222	2,802,890	2,340,702
	4 mos.	8,929	45,862,599	13,092,940	64,951,228	9,773,111	11,813,245	1,524,468	21,911,683	2,427,656	48,752,370	75.1	16,198,858	10,745,097	10,085,672	9,449,691
Atlantic Steamship Lines	Apr.	.....	847,748	39,133	1,069,350	16,565	203,174	16,079	634,961	36,746	907,525	84.9	161,825	161,564	163,660	149,410
	4 mos.	.....	3,142,189	147,540	4,007,356	68,735	776,181	67,921	2,522,514	137,524	3,572,875	89.2	434,481	412,936	415,114	503,029
Texas & New Orleans	Apr.	4,590	4,125,441	951,873	5,574,326	1,115,409	1,162,460	165,740	2,165,042	262,822	4,887,807	87.7	686,519	471,747	259,884	—60,572
	4 mos.	4,548	16,636,654	3,982,472	22,514,798	4,418,756	4,785,529	648,917	8,594,911	1,065,078	19,647,218	87.3	2,867,580	1,677,982	850,274	854,054
Spokane, Portland & Seattle	Apr.	554	535,533	90,903	682,878	99,025	109,069	10,923	198,670	21,809	444,480	65.1	238,398	159,109	163,373	102,378
	4 mos.	554	1,916,904	352,076	2,478,573	341,264	396,249	39,987	783,117	95,064	1,674,901	67.6	803,672	486,635	478,747	396,264
Tennessee Central	Apr.	296	248,410	25,517	287,116	58,988	43,373	9,332	95,630	12,542	219,749	76.5	67,367	62,603	43,778	21,924
	4 mos.	296	881,422	98,314	1,038,536	215,882	179,064	34,507	398,024	57,411	883,939	85.1	154,597	136,032	75,487	87,265
Term. R. R. Assn. of St. Louis	Apr.	55	.....	.....	1,006,465	186,177	86,571	2,201	402,994	24,152	705,124	70.1	301,341	198,764	275,075	363,680
	4 mos.	55	.....	.....	4,534,019	638,873	386,050	9,088	1,806,266	91,449	2,944,531	64.9	1,589,488	1,177,090	1,470,693	1,477,496
Texas Mexican	Apr.	162	140,878	5,502	160,558	24,671	20,126	4,042	57,341	5,605	111,785	69.5	48,773	43,773	32,944	58,681
	4 mos.	162	471,178	26,706	542,029	115,192	94,477	16,666	209,799	23,053	459,013	84.7	83,016	63,016	27,506	135,871
Toledo, Peoria & Western	Apr.	239	118,956	7,886	138,957	36,097	18,834	7,359	55,257	9,449	126,978	91.4	11,979	9,950	2,696	—26,516
	4 mos.	239	463,118	32,683	535,455	100,129	82,795	29,456	240,979	31,939	485,280	90.6	50,175	33,070	2,162	—70,014
Trinity & Brazos Valley	Apr.	367	169,325	6,851	183,622	62,549	25,083	5,495	89,261	12,256	187,939	102.4	—4,317	—11,567	—30,842	—61,088
	4 mos.	367	869,683	32,450	930,200	229,268	128,536	21,445	446,994	48,559	836,874	90.0	93,326	63,762	—38,586	—237,743
Ulster & Delaware	Apr.	128	52,803	4,867	93,337	17,343	18,002	1,340	44,179	4,983	85,847	92.0	7,490	1,740	—1,499	—212
	4 mos.	128	144,941	19,196	286,358	62,236	64,714	5,341	162,271	20,745	315,307	110.1	—28,949	—51,949	—62,270	—63,951
Union Railroad of Penna.	Apr.	45	.....	.....	736,361	166,767	211,251	173	381,503	12,932	772,618	104.9	—36,257	—46,257	10,871	236,782
	4 mos.	45	.....	.....	3,092,518	430,869	819,156	648	1,594,116	48,900	2,893,614	93.6	198,904	135,904	423,223	564,007
Union Pacific	Apr.	3,714	5,473,321	1,189,371	7,391,743	1,224,071	1,785,949	187,639	2,163,769	354,180	5,870,490	79.4	1,521,253	806,793	688,623	1,203,724
	4 mos.	3,714	22,691,127	4,530,944	29,950,557	3,494,314	6,741,020	642,514	8,908,052	1,314,633	21,674,525	72.4	8,276,032	5,431,608	5,023,520	6,061,100
Oregon Short Line	Apr.	2,539	2,057,719	290,956	2,559,934	585,366	491,259	57,056	757,969	136,600	2,083,363	81.4	476,571	221,152	160,304	280,385
	4 mos.	2,537	8,341,267	1,242,433	10,343,832	1,622,537	1,876,507	197,157	3,176,465	503,526	7,576,706	73.2	2,767,126	1,745,244	1,514,716	1,481,481
Oregon, Wash. R. R. & Nav. Co.	Apr.	2,237	1,679,095	258,335	2,150,729	530,557	370,391	78,080	773,127	128,051	1,913,003	88.9	237,726	53,131	—49,659	118,064
	4 mos.	2,237	6,359,872	1,096,344	8,215,701	1,565,022	1,429,773	282,795	3,212,858	485,849	7,088,039	86.3	1,127,662	390,069	25,529	279,095
Los Angeles & Salt Lake	Apr.	1,208	1,492,355	338,169	2,026,194	452,533	422,724	83,219	617,333	80,035	1,738,240	85.8	287,954	155,352	59,502	26,890
	4 mos.	1,208	5,899,838	1,347,611	7,968,664	1,519,489	1,689,396	332,240	2,576,481	303,687	6,747,693	84.7	1,220,971	688,996	322,446	137,792
St. Joseph & Grand Island	Apr.	258	204,798	13,983	236,183	63,494	34,492	3,437	90,931	16,291	208,645	88.3	27,538	14,307	3,369	36,355
	4 mos.	258	873,173	53,223	989,982	162,632	155,289	12,379	373,123	62,322	765,745	77.3	224,237	159,227	112,339	225,469
Utah	Apr.	111	118,908	.....	118,987	11,513	46,911	381	22,595	5,188	86,588	72.8	32,399	25,089	23,628	3,767
	4 mos.	111	612,754	36	615,198	73,484	163,157	1,492	119,263	25,083	382,479	62.2	232,719	188,984	169,621	92,539
Virginian	Apr.	545	1,720,682	54,132	1,900,895	197,941	377,452	13,973	386,422	32,544	1,003,430	52.8	897,465	747,433	787,393	460,712
	4 mos.	545	7,421,184	233,139	8,164,334	807,936	1,469,017	56,297	1,588,327	130,871	4,033,609	49.4	4,130,725	3,485,685	3,704,763	2,534,539
Wabash	Apr.	2,524	4,451,414	663,261	5,502,587	784,365	1,009,347	154,083	2,178,333	180,759	4,313,447	78.4	1,189,140	912,974	602,286	736,065
	4 mos.	2,524	18,288,379	2,569,896	22,384,033	2,771,937	4,021,673	648,109	9,038,168	718,556	17,222,993	76.9	5,161,040	4,044,265	2,854,452	3,126,787
Ann Arbor	Apr.	293	459,287	18,831	492,500	49,041	103,425	12,368	182,274	14,050	361,157	73.3	131,343	107,437	91,804	69,628
	4 mos.	293	1,760,432	84,633	1,899,847	188,032	392,060	49,542	770,400	46,812	1,446,232	76.1	453,615	358,677	283,417	278,793
Western Maryland	Apr.	804	1,684,901	39,078	1,785,013	299,123	407,050	38,665	499,422	45,828	1,295,371	72.6	489,642	389,642	423,132	374,564
	4 mos.	804	7,289,386	166,228	7,705,955	1,116,323	1,664,193	152,034	2,321,170	182,494	5,454,215	70.8	2,251,740	1,851,740	1,892,503	1,636,430
Western Pacific	Apr.	1,042	943,509	136,036	1,146,961	251,450	312,501	44,418	389,568	41,480	1,059,836	92.4	87,125	—36,475	21,392	162,299
	4 mos.	1,042	3,537,609	431,744	4,199,586	753,289	980,281	165,457	1,574,521	170,615	3,702,579	88.2	497,005	1,573	313,828	840,983
Wheeling & Lake Erie	Apr.	511	1,286,228	30,927	1,415,591	188,859	360,597	34,515	447,280	45,329	1,078,215	76.2	337,376	226,374	236,387	310,410
	4 mos.	511	5,851,056	128,012	6,331,409	734,816	1,544,569	132,745	1,958,948	170,643	4,548,756	71.8	1,782,653	1,252,590	1,222,167	1,198,752

News of the Week

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apprentices, engineers (except steam-shovel) firemen and labor foremen in shops, 3 cents per hour; section laborers, from 1 to 2 cents per hour, depending on present wage; maintenance of way laborers in the construction department, drillers, powder men and helpers, 2 cents per hour. Extra gang laborers, draw bridge watchmen, shop laborers and pumpers were refused increases.

Steel Treaters and Welding Society to Hold Combined Exposition

The National Steel and Machine Tool Exposition will be held at Detroit, Mich., during the week of September 19 under the auspices of the American Society for Steel Treating. Ninety thousand square feet are available for exhibit purposes this year. The factory equipment exposition will cover everything from steel, raw material, heat treating equipment, small tools, machine tools, forging equipment, inspection, handling and welding materials. Approximately 10,000 sq. ft. will be devoted to welding material and equipment, a new feature of the steel and machine tool exposition. The welding exhibit was previously an independent exposition under the auspices of the American Welding Society. This year the annual fall meeting of the welding society will be held at Detroit, beginning September 19.

Canadian Wage Increase Cases

Over 30,000 employees of the Canadian Pacific and Canadian National are affected by wage disputes which, according to present prospects, will be amicably adjusted during the present month. Through a concession to its employees the Canadian Pacific last week was able to satisfy its freight handlers, checkers and truckers.

The men have accepted the offer made by the company of the three-cent advance for clerks and checkers, and two cents advance for truckers. Further, the company have agreed to apply an additional cent to those truckers whose wages in certain parts of the country fall below what might be considered a standard wage such as is in effect at Montreal, Toronto, and one or two other eastern points.

The men had been made an offer originally by the company which meant an average increase of 2½ cents an hour, and had insisted on four cents, as recommended by a board of arbitration.

Record Run Washington to New York

On the occasion of the reception of Colonel Charles A. Lindbergh at Washington, on Saturday, June 11, the Pennsylvania Railroad ran a special train from Washington to New York, for the International News Reel Company, which covered the distance of 226 miles in three hours, seven minutes; left Washington 12:14 p. m., arrived at New York 3:21 p. m.; average speed 72½ miles an hour. The steam locomotive which took the train at Washington was run through to Manhattan Transfer, N. J., 217 miles, without a stop; and an electric locomotive took the train from there to the Pennsylvania Station, New York.

The International News Reel Company, with ten men on the train, had motion pictures developed and printed while on the road and delivered them to the Broadway picture houses in New York about 15 minutes after the arrival of the train; and more than an hour prior to the appearance of pictures which were carried from Washington to New York by airplane and developed after arrival.

Special preparations were made to insure a clear track for the fast train. The road is four-track for nearly all of the way, but freight trains were side-tracked where necessary.

A. L. Hayden, a fireman of the Maryland division, fired the locomotive the entire distance from Washington to Manhattan Transfer, though the enginemen (who were assistant road foremen) ran shorter distances; J. A. Warren, 40 miles; A. J. Sentman, 94 miles and W. L. Anderson, 81 miles.

Dinner to E. E. Calvin

The mayor of Cheyenne, Wyo., proclaimed Saturday, June 11, as "Calvin Day" in honor of Edgar E. Calvin, vice-president of the Union Pacific, as a preparation for the banquet given by the Union Pacific Old Timers' Club No. 1, celebrating the completion by Mr. Calvin of 50 years of service with this company. A special train for the event was run from Denver, Colo., and another from Omaha, Neb., to Cheyenne, and in addition twelve private cars and eight extra sleepers were attached to regular trains to carry the 780 persons who came to the banquet. Speakers at the dinner included Charles K. Collenburg, president of the Union Pacific Old Timers' Club; Charles W. Riner, mayor of Cheyenne; Frank C. Emerson, governor of Wyoming; William M. Jeffers, general manager of the Union Pacific, and Mr. Calvin. While Mr. Calvin has completed 50 years of service with the Union Pacific, his railroad career began in 1875 as a telegraph operator on the Indianapolis, Cincinnati & Lafayette. He drove the first spike for the Oregon Short Line at Granger, Wyo., on July 11, 1881.

Freight Train Telephone Tests on N. Y. C.

The New York Central, which last year experimented on a freight train near Chicago with radio telephone apparatus, for communicating between locomotives and caboose, has this week made, near Schenectady, N. Y., other experiments in the same line, these being carried out in connection with engineers of the General Electric Company. Short-wave transmitters are used, insuring freedom from interference with broadcasting stations. Communication was had not only from end to end of train but also with a roadside station.

Seek Ticket Forger

The Railway Ticket Protective Bureau, Chicago, is offering a reward of $500 for the identification and apprehension of the forger or forgers responsible for the printing and use of spurious railroad passenger tickets on a number of railroads since 1923. The first use of these forged tickets occurred in December, 1923, when a ticket purporting to be issued by the Erie & Michigan Transportation Company was accepted for transportation over the Atchison, Topeka & Santa Fe from Joplin, Mo., to San Diego, Cal. The ticket was printed on gray-white plain paper without water mark. The second was a skeleton coupon ticket purporting to be issued by the Lehigh Valley, accepted on the Erie from Binghamton, N. Y., to Griffith, Ind. The ticket was printed on light blue-green plain paper with a faint water mark and the printing was poor. The number of the ticket was imprinted by a rubber stamp with red ink. The agent's selling stamp read "L. V. R. R., Marcy, Pa.," with the date of sale in the center.

Another forged ticket of identical make-up but with the name of the issuing line changed from "Lehigh Valley" to "Union Pacific" appeared in December, 1926. The coupon portion of the ticket was made to read by way of the Minneapolis, St. Paul & Sault Ste. Marie from Portal, N. D., to Portage, Wis. The forger aimed to permit the use of the ticket only as far as Stevens Point, Wis., and thus to prevent its appearance in the auditor's collection; but the conductor out of Portal issued a train check from St. Paul to Portage, and took up the spurious ticket.

Recently a fourth ticket, ostensibly issued by the St. Louis-San Francisco by way of the Florida East Coast from Jacksonville, Fla., to Homestead, has appeared. This ticket was the same in appearance as those just described.

Gulf Coast Lines Protest Recapture Clause

The Gulf Coast Lines, in a brief filed with the Interstate Commerce Commission in their "excess income" case, take the position that was taken by the St. Louis & O'Fallon in its injunction suit to restrain the enforcement of the commission's order in a similar proceeding, that Paragraph 6 of Section 15a of the transportation act, the recapture clause, is not applicable to or enforcible against them because "they have received no income under rates fixed in the manner contemplated by that section." This position is taken on the ground that the aggregate annual net railway operating income of the carriers as a whole in the western group territory has not at any time since March 1, 1920, equalled or approximated the "fair return," and it is pointed out that the commission has officially made the admission that this is so in its decisions in the reduced rate case of 1922; also in the western rate advance case of last year and in the O'Fallon case.

"Indeed, the deficiency under the fair return has been so marked and substantial," the brief says," that its existence has become a matter of national notoriety,

if not of national concern. It must not be forgotten, in any consideration of section 15a, that this portion of the law is primarily a rate-making scheme. The recapture clause is only incidental. It may have been the key without which the door to the vault could not have been unlocked, but it was neither the door nor the vault nor the contents. If the recapture clause had been more than an incident, or a by-product, the measure would have been more properly contained in a revenue act than in the transportation act."

Revenues and Expenses for April

Class I railroads in April had a net railway operating income of $73,627,248, which for that month was at the annual rate of return of 4.36 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In April, 1926, the net was $75,881,708, or 4.61 per cent. Operating revenues for the month amounted to $498,427,865, as compared with $500,489,191 in April, 1926, operating expenses $384,667,987, as compared with $385,783,021.

Class I railroads in April paid $30,390,190 in taxes. This brought the total tax bill for four months in 1927 to $119,481,917, an increase of $947,380 or eight-tenths of one per cent above that of the corresponding period in 1926.

Thirty-four Class I railroads operated at a loss in April, of which 14 were in the Eastern district, 3 in the Southern and 17 in the Western district.

For the first four months the aggregate net was $299,964,211, or at the rate of 4.63 per cent, as compared with a net of $299,850,537, or 4.75 per cent, in the corresponding period of last year.

Operating revenues for four months amounted to $1,985,746,338, an increase of six-tenths of one per cent. Operating expenses totaled $1,529,253,575, an increase of four-tenths of one per cent.

Net railway operating income by districts for the first four months with the percentage of return based on property investment on an annual basis was as follows:

New England Region	$12,239,878	5.76%
Great Lakes Region	52,508,226	5.05
Central Eastern Region	70,115,599	5.51
Pocahontas Region	26,609,898	8.77
Total Eastern District	161,473,601	5.71
Total Southern District	48,323,101	4.67
Northwestern Region	14,299,849	1.82
Central Western Region	49,917,922	4.08
Southwestern Region	25,949,738	4.25
Total Western District	90,167,509	3.44
United States	299,964,211	4.63

The rate of return on property investment for the five years ending with the month of April, 1927, has averaged 4.54 per cent.

In the Eastern district for the first four months the net railway operating income was $161,473,601, at the annual rate of 5.71 per cent. For the same period in 1926 their net was $153,986,370 or 5.60 per cent. Operating revenues for the first four months totaled $1,007,948,784, an increase of 1.9 per cent, while operating expenses totaled $773,689,056, an increase of nine-tenths of one per cent. For April the net was $44,645,409, compared with $44,928,363 in April, 1926.

In the Southern district for the four months the net was $48,323,101, at the rate of 4.67 per cent, as compared with $56,229,628, at the rate of 5.72 per cent last year. Operating revenues amounted to $279,732,895, a decrease of 7.3 per cent, while operating expenses totaled $210,680,396, a decrease of 4.5 per cent. The net for April amounted to $12,477,961, while in the same month in 1926 it was $12,031,018.

Class I railroads in the Western district for the first four months had a net of $90,167,509, at the rate of 3.44 per cent. For the first four months in 1926, they had a net of $89,634,539, at the rate of 3.48 per cent. Operating revenues in the Western district amounted to $698,064,659, an increase of 2.1 per cent, while operating expenses totaled $544,884,123, an increase of 1.7 per cent. For April, the net in the Western district amounted to $16,503,878, as compared with $18,922,327 in April, 1926.

The summary for the Class I railroads of the United States follows:

April

	1927	1926
Total operating revenues	$498,427,865	$500,489,191
Total operating expenses	384,667,987	385,783,021
Taxes	30,390,190	30,388,166
Net railway operating income	73,627,248	75,881,708
Operating ratio — per cent	77.18	77.08
Rate of return on property investment.	4.36%	4.61%

Four Months

Total operating revenues	$1,985,746,338	$1,974,741,994
Total operating expenses	1,529,253,575	1,523,204,210
Taxes	119,481,917	118,534,537
Net railway operating income	299,964,211	299,850,537
Operating ratio — per cent	77.01	77.13
Rate of return on property investment.	4.63%	4.75%

Southern Pacific Hopes to Escape Inundation

Reports from the flooded area in southern Louisiana indicate that the water levels adjacent to the Southern Pacific main line between Baldwin and Schriever, which is the principal district affected, will be somewhat lower than heretofore predicted. The Southern Pacific has had large forces working on the track for more than a month, raising the low spots and protecting the track by other measures. H. M. Lull, executive vice-president, commenting on the situation, states that the prospects are now good that no part of the main line between New Orleans and Texas will be submerged, nor will there be any interruption to traffic. The Southern Pacific is handling traffic on schedule, except for slight delays due to the extensive use of its tracks by other lines for detours. In addition, there has been a heavy movement of refugees and their effects.

Railroad service in northern Louisiana continues to improve. The Missouri Pacific has extended service on its Collinston-Vidalia branch as far as Wisner in Franklin parish. Water still covers the track for 25 miles between Wisner and Vidalia, but it is expected that service into Vidalia and thence by car ferry into Natchez, Miss., will be resumed this week. Service on the line of the M.P. which parallels the Mississippi river in northern Louisiana has been resumed from McGehee, Ark., to Tallabena, La., 6 miles north of Tallulah, and further extensions of service on this line are being made this week. Only two small stretches of M.P. tracks in Arkansas were out of service at last reports, 7 miles between Trippe Junction and Arkansas City and 40 miles between Ferguson and MacArthur. Rehabilitation work is proceeding rapidly on these lines. The Vicksburg, Shreveport & Pacific is also resuming partial service on its main line between Vicksburg, Miss., and Monroe, La., although some difficulty is being experienced in the vicinity of Tallulah, La.

In the flooded section of Mississippi, railway service is also improving. The Yazoo & Mississippi Valley has extended its service to Metcalf, Miss., from Leland, anticipating earlier expectations by several days. Water is leaving the tracks more rapidly in this section than hitherto and other extensions of service are being made daily.

Work trains are progressing toward Greenville, Miss., on the Columbus & Greenville, having reached Dunleith, Miss., on June 5. Train service is following in the wake of the work trains, having been extended to Elizabeth, Miss., this week.

New York Central to Protest Valuation

The New York Central has issued a statement setting forth its position with regard to its tentative valuation. The statement says that the service by the Interstate Commerce Commission of the tentative valuation of the property of the New York Central practically concludes the tentative valuations of the roads constituting the New York Central Lines, as those of the Michigan Central, the C. C. C. & St. L., the Pittsburgh & Lake Erie, the Chicago Junction, the Ohio Central lines and the Cincinnati Northern have previously been served. The Indiana Harbor Belt and the Chicago River and Indiana are the only roads of the Lines whose tentative valuations have not yet been completed. The statement continues as follows:

"The valuations of the different lines are of their properties as they stood at different dates: the New York Central as of June 30, 1917; the Michigan Central as of June 30, 1918; the C. C. C. & St. L. as of June 30, 1915; the Pittsburgh & Lake Erie as of June 30, 1916; the Chicago Junction as of June 30, 1919; the Ohio Central Lines as of June 30, 1918; and the Cincinnati Northern as of June 30, 1918. The valuations do not include additional property and betterments made since these dates.

"In each case the valuations of land are based on the Commission's estimate of the value of the land as of the respective dates of valuation, but the engineering values, that is of tracks, etc., are based upon the Commission's figures of prices as of the 1914 pricing level, which embraces the average prices in such accounts over a period of about ten years previous to that year.

"The valuations include the carrier property used in the service of transportation, but do not include property owned by the carriers not in use in transportation service and do not include the very large amount of stocks, bonds and other personal property owned by each of the companies, particularly by the New York Central, the amount held by the latter company being stated by the Commission to be $265,917,561 par value. They do not include, either, the property of the railroad companies in Canada, which are owned or leased by the New York Central and the Michigan Central, the value of which is very large.

"The New York Central valuation just served includes the valuation of its leased lines—the West Shore, the Boston & Albany, The Harlem and other smaller properties. Of the total of $1,038,265,910, a value of $731,800,000 is assigned to the New York Central owned and used

property, and $306,465,910 to the leased properties.

"The valuations of the different properties of the system have been proceeding since the enactment of the law, in 1913. During the past eighteen months the valuation forces of the companies have been in constant conference with the corresponding forces of the Commission and representatives of such State Commissions as desired to be present. Innumerable matters of detail have been discussed, the Commission in accordance with the usual practice, has afforded to the companies opportunity to present all material facts, and, in consequence, the result represents, to a large extent a series of agreements. A number of points, involving very large sums of money—the disagreement on but one subject, that of theoretical depreciation, representing a difference between the Commission's figures and the railroad company's figures of $177,000,000—are still in dispute, however, and these points will be laid before the Commission in the protest which the company will file, and which it will prosecute as vigorously as the law permits."

Howard Elliott at Carleton College

Howard Elliott, chairman of the Northern Pacific, in addition to his railroad interests, always has been much interested in educational activities. On June 13 Mr. Elliott had conferred upon him an honorary degree of Doctor of Laws at Carleton College, Northfield, Minn. Mr. Elliott graduated from Harvard in 1881 and is now president of the Board of Overseers of that university. He received an honorary degree from Middlebury College, Vt., in 1916, and one from Trinity College, at Hartford, Conn., in 1924. In his address at Carleton College he reviewed the great changes that have taken place in transportation and industry since he graduated from college.

"It is estimated," he said, "that only 30 years ago power equipment available for the 'average man' in the United States was less than one horse-power. Today it is nearly 6½ hp. Steam pressures of 500 lb. to the square inch are not uncommon, and pressures of 1,200 and 1,500 pounds are being tried—something unheard of a few years ago. The energy resources in the form of coal, oil, gas and water power, measure the limit to development and prosperity."

Emphasizing the need for college graduates with their superior training to take an active part in public affairs, Mr. Elliott referred to the great increase that has occurred in the cost of government.

"The earnest effort of the federal government to curtail expenditures has brought about a decline in federal taxation of 36 per cent since 1919," he said, "but in the same period state and local taxation has increased 72 per cent. State and local governments collected $2,965,000,000 for taxes in 1919 and the federal government $5,069,000,000. In 1925 state and local governments collected $5,100,000,000 and the federal government $3,225,000,000. The savings by the national government have been offset by increased expenditures by the smaller political units.

"In the railroad business the tax burden is felt keenly. Since 1920 every ordinary item of operating expense on the railroads has been reduced. Railroad taxes, however, have increased nearly 50 per cent in the same period. In other words, every item of expense over which railroad management has control has been cut down during the past five years while taxes, over which railroad management has no control, increased by leaps and bounds."

Traffic

The Southeastern Shippers Advisory Board

The Southeastern Shippers Advisory Board held its regular convention at Mobile, Ala., on June 10, with an attendance of about 500.

The net volume of business in the Southeast during the third quarter of 1927 will be 10 per cent greater than in the third quarter of 1926, according to reports presented by the commodity committees. The movement of cement is expected to show a 12½ per cent increase; and crushed stone, sand, etc., 20 per cent. The volume of cotton is expected to be 30 per cent greater but the low price of this commodity leads fertilizer manufacturers to predict a 15 per cent decrease in the movement of fertilizers. Increases are expected in hardwood lumber, 15 per cent; naval stores, 15 per cent; petroleum and products, 10 per cent; textiles, 25 per cent; fresh vegetables, 20 per cent; and coal and coke, 5 per cent. A decrease of 6 per cent is expected in iron and steel.

Seattle-Portland Joint Operation

The Interstate Commerce Commission has approved a new contract between the Northern Pacific, the Great Northern and the Oregon-Washington, extending for three years from April 1 the arrangement previously approved by the commission for the operation of joint passenger train service between Seattle and Tacoma, Wash., and Portland, Ore., with provision for a division of earnings.

Past Presidents' Passenger Association

At a meeting of Past Presidents' Passenger Association held on board the French Line steamship "La Bourdonnais" on June 11, the following officers were elected: president, Frederick R. Perry, general agent, passenger department, Canadian Pacific, New York; vice-president, Joseph A. Hurney, city ticket agent, Chesapeake & Ohio and Seaboard Air Line, Washington, D. C.; secretary-treasurer, Charles Schanze, chief clerk, passenger traffic department, Baltimore & Ohio, Baltimore.

As the name indicates this asociation is composed of former presidents of various railway passenger and ticket agents' associations throughout the United States and Canada.

Pacific Northwest Advisory Board

Pacific Northwest states may expect that business will be "fair to good" during the third quarter of 1927, members of the Pacific Northwest Advisory Board reported at Spokane, Wash., on June 9. This meeting was attended by 242 railroad representatives and 256 shippers, the largest attendance ever recorded at a meeting of this organization. Fewer cars will be required to move automobiles and also fewer for canned fruits and vegetables, live stock and lumber. Increased car requirements are expected for coal and coke and in the cement industry; also probably for fertilizers, gravel, sand, hay, iron, petroleum, raw wool and lime. Reports from the railroads indicated that road and terminal operating conditions were normal and car supplies adequate. Pacific Fruit Express and Western Fruit Express representatives stated that prospects for increases in traffic were favorable.

Flowers and Birthday Cakes

Wednesday, June 15, was the 25th anniversary of the 20-hour trains between New York and Chicago on both the New York Central and the Pennsylvania, and the occasion was duly celebrated. On the Pennsylvania the dining cars had mammoth birthday cakes, and a piece of cake was given to each diner. Attention is called to the fact that most of the men on these trains are veterans. The chefs average 23 years in the service and there are waiters who have served 20 years.

The New York Central had commemorative ceremonies both in New York and Chicago on the departure of the trains, carpets being laid in the paths of passengers who boarded the cars and platforms and doorways being decorated with flowers, shrubbery and flags. The westbound train on June 14 consisted of four sections carrying 375 passengers and the eastbound train had three sections with 345 passengers. At New York, President P. E. Crowley was on hand to greet guests and to congratulate the train crews, including veterans who ran on the first trip 25 years ago. The band of the New York Central employees in the Avis (Pa.) shops, provided music at New York and the band from Collinwood, Ohio, played in the station in Chicago.

New England Shippers' Advisory Board

The New England Shippers' Advisory Board held its sixth regular meeting at Manchester, N. H., on June 10, with an attendance of 425. The usual reports of commodity committees were presented and addresses were made by M. J. Gormley and G. C. Randall of the American Railway Association. W. F. Garcelon, of Boston, was re-elected general chairman and F. J. Dowd (Associated Industries of Massachusetts) general secretary. At the noon-day luncheon, the members were addressed by George A. Wood, president of the New Hampshire State Chamber of Commerce; and at the dinner on the evening of the 9th, addresses were made by H. N. Spaulding, governor of New Hampshire; George Hannauer, president of the Boston & Maine and Robert Dollar, president of the Dollar Steamship Line. Cap-

tain Dollar gave interesting information concerning transportation and other business matters in China and Japan.

Few of the commodity committee reports predicted any considerable change in the volume of traffic for the summer months. Canned goods are expected to move in 50 per cent greater volume than last year, automobiles and accessories 25 per cent greater and petroleum products five to ten per cent greater. Builders' supplies are expected to fall off 10 per cent, and machinery five to ten per cent. The committee on cotton and cotton products found it impossible to make any calculation as to the prospects for the future.

The Central of Georgia's Record

J. J. Pelley, president of the Central of Georgia, who, month by month, issues messages to the public in the advertising pages of the daily press in Georgia and Alabama, devotes his last circular to a statement of the company's preparedness for summer passenger traffic. The statement says in part:

"A summer vacation is no longer looked upon as a luxury for the rich. It is now regarded as a necessity for the working man or woman even more than as an indulgence of the wealthy. The Central of Georgia offers special attractions to the summer vacationer. * * * The matter of time consumed is important to the average vacationer. Delays to trains can cause missed connections or other annoyances, resulting in irritation that may spoil the entire vacation. The Central of Georgia is proud of its on time record. Last year, out of every 100 passenger trains operated by this railroad, 96 were handled on time.

"The matter of safety is another factor of prime importance. There is no other method of getting people from place to place that is nearly so safe as the railroad. There has been no passenger fatality on the Central of Georgia in the past four and one half years, during which time more than fourteen million passengers have been safely handled by this railroad. The equipment, operating personnel and on time record of Central of Georgia through passenger trains are not surpassed for safety, comfort and convenience by any of the famous passenger trains serving other sections.

"The Central of Georgia, in connection with the Ocean Steamship Company serves the summer traveler with a fleet of thoroughly modern steamships with three sailings weekly from Savannah to New York and two to Boston. The inland dweller sometimes regards a sea trip as hazardous, but in the seventy-nine years the Ocean Steamship Company has been in operation not a passenger fatality has occurred. Reduced excursion fares are also available for the traveler using steamship service, tickets including meals and berth aboard ship without extra cost.

"The Central of Georgia is anxious to serve the summer traveler. The ticket agent's service is not limited to selling a ticket or telling when the next train will leave. He can wire ahead for sleeping car or steamship reservations. He can recommend best routes to travel. * * * He has, or can quickly obtain, almost any information the traveler may need."

Hearing on Alberta Coal Rates

A wide divergence of figures features the estimates made before the Dominion Railway Board last week by the interests affected in the controversy over the cost of carrying coal from Alberta to Ontario. For some years, both in the Canadian Parliament and out of it, there has been an agitation by representatives of Ontario and Alberta to effect some freight arrangement, with or without government monetary aid, that would enable the movement of Alberta coal to Ontario and thus both help the Alberta producers, whose market is limited, and the Ontario consumers who, it is declared, should not be so utterly dependent upon the supply from the United States.

As the haul from the Alberta mines to Toronto is at least 2,000 miles the freight bill is the biggest factor in the price of that coal to Ontario consumers. The railways are not anxious to carry this coal at any price and when the other parties to the transaction seek to minimize the out-of-pocket cost of this movement to the railways the latter are ready to back out of the question at once. There have, at the instance of the Dominion and provincial governments, been trial movements of this coal, but they have not proved to be economical.

Last week the Railway Board, on the instruction of the Dominion government, opened a hearing into the cost of such movement, and this hearing is proceeding. The contention of the province of Ontario is that the actual "out-of-pocket" cost of transporting Alberta coal to Toronto is between $5.03 and $6.08 a ton, with the former figure probably a trifle low and the latter figure higher than necessary. This rate compares with an estimate by the Canadian National of $7.44 a ton and an estimate by the Canadian Pacific Railway of between $7.29 and $8 a ton.

George W. Oliver, Chicago expert employed by the province of Ontario, placed an exhaustive analysis of costs before the board to support the estimate made by the province.

The witness differed in a number of particulars with E. P. Mallory, who compiled the estimate for the Canadian National. The great difference, he alleged, arose in the amount allowed for maintenance of equipment. He claimed that the C.N.R. estimate of out-of-pocket cost allowed 20 per cent for freight operating expenses and that 20 per cent of these operating costs were attributed to maintenance of equipment. As a matter of fact, he said, freight car repairs over the whole C.N.R. system during 1925 only amounted to 10.6 per cent of the total freight operating expenses and he argued that it could not be shown that the higher amount—20 per cent—could be justified as attributed to the operation of cars carrying coal.

In summing-up his direct testimony the witness said that the board could not in his opinion hope to determine the exact cost of moving western coal to Ontario, but could only attempt to determine as closely as possible the out-of-pocket cost of shipments to the railways. He explained that the out-of-pocket cost meant the actual cost which would result over and above what the railways would have to pay for maintenance of their lines whether or not they carried western coal to central Canada. He held that, while his figures were not exact, they represented a margin more than sufficient to meet the cost indicated.

Prepared for Winter Wheat Movement

All necessary preparations are being made by the railroads and the interested shippers' advisory boards to meet the requirements of the movement of winter wheat, according to a circular letter addressed to the railroads by L. M. Betts, manager of the closed car section of the Car Service Division, American Railway Association. Mr. Betts says, in part:

"The government crop estimate, based upon conditions June 1, indicates a total crop of 537 million bushels and presages the smallest winter wheat crop since 1917 with the exception of the year 1925. This loss of condition was particularly marked in the area of heavy winter wheat production west of the Mississippi. A survey recently completed by the Trans-Missouri-Kansas Shippers Advisory Board shows combined harvester-threshing machines in use as follows:

	Number of machines in use 1926 harvest	Estimated additional machines this season	Total	Percentage of increase
Kansas.....	8,276	4,112	12,388	49.7
Oklahoma..	3,189	1,993	5,182	62.5
Texas.....	2,684	997	3,681	37.1
Total.....	14,149	7,102	21,251	50.2

The use of this machine permits the marketing of wheat so rapidly that in the absence of storage reservoirs on farms to abate the flow, even with an ordinary crop, the country elevators are liable to be overwhelmed, while the rush is on, regardless of the number of cars the railroads may have available. This introduces a factor which considerably changes the complexion of the transportation situation for the winter wheat movement. Even with a smaller crop than last year the initial movement is likely to be as great, if not as long sustained.

"Joint terminal grain committees, composed of representatives of the receivers and local railroads, have been established by the Trans-Missouri-Kansas Advisory Board at Kansas City, Wichita, Hutchinson, Salina, St. Joseph and Atchison, and by the Southwest Shippers Advisory Board at Fort Worth, at Houston and at Galveston.

"Railroads in the western territory are well prepared for the seasonal grain movement. The records show that eastern and southeastern roads have 10 per cent less western box cars in their possession now than they had a year ago at this time, there being a corresponding increase of western cars on western roads. All roads involved are accumulating grain-fit cars for the initial loading."

Equipment and Supplies

Locomotives

THE STATE BELT RAILWAY OF SAN FRANCISCO is inquiring for one six-wheel switching locomotive.

THE MANILLA RAILROAD has ordered 3 three-cylinder Pacific type locomotives from the Baldwin Locomotive Works.

Freight Cars

THE UNITED FRUIT COMPANY is inquiring for 25 flat cars, 3 tank cars and 75 box cars.

THE PHILLIPS PETROLEUM COMPANY, Bartlesville, Okla., is inquiring for from 10 to 100 tank cars.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for 100 composite gondola car bodies of 50 tons' capacity.

THE NEW JERSEY, INDIANA & ILLINOIS has ordered 100 box cars of 40 tons' capacity from the American Car & Foundry Company.

THE DULUTH, MISSABE & NORTHERN is inquiring for 250 ore cars. A previous inquiry for 250 cars was reported in the *Railway Age* of February 26.

THE LEHIGH & NEW ENGLAND has ordered 200 all-steel box cars of 50 tons' capacity from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of April 23.

Passenger Cars

THE GULF, MOBILE & NORTHERN is inquiring for one business car.

THE AMERICAN RAILWAY COMPANY OF PORTO RICO is inquiring for two passenger coaches.

THE CHICAGO, NORTH SHORE & MILWAUKEE is inquiring for 20 steel electric interburban cars.

THE UNION PACIFIC has ordered one 72-ft. combination mail, baggage and passenger, gas-electric rail motor car, from the Electro-Motive Company.

THE ERIE is now inquiring for 25 all steel baggage and express cars. In the *Railway Age* of April 2 it was reported that the company would buy this equipment.

THE LONG ISLAND has ordered one combination passenger and baggage, rail motor car, from the J. G. Brill Company. This is for service between Bridgehampton and Sag Harbor.

THE NORFOLK & WESTERN is now inquiring for 25 mail storage cars. In the *Railway Age* of May 28 it was reported that this company would ask for bids on this equipment.

THE ILLINOIS CENTRAL has ordered 6 baggage and mail cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of May 7.

THE TORONTO, HAMILTON & BUFFALO has ordered one 60-ft. combination passenger and baggage gas-electric, rail motor car from the Canadian Car & Foundry Electro-Motive Company.

THE READING has ordered 10 baggage cars from the American Car & Foundry Company and 5 from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of May 7.

Iron and Steel

THE PERE MARQUETTE has ordered 275 tons of steel for plate girder spans from the American Bridge Company.

THE ILLINOIS CENTRAL has ordered 1,500 tons of structural steel for viaducts in Chicago from the American Bridge Company.

THE TEXAS & PACIFIC has ordered 2,000 tons of structural steel for shops at Ft. Worth, Tex., from the Virginia Bridge Company.

THE ATCHISON, TOPEKA & SANTA FE has ordered 2,800 tons of structural steel for a machine shop at Cleburne, Tex., from the McClintic-Marshall Company.

Machinery and Tools

THE UNITED STATES CAST IRON PIPE & FOUNDRY COMPANY has ordered one 48-in. by 24-ft. heavy lathe, from the Niles-Bement-Pond Company.

Signaling

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company, an electric interlocking for Station 47, Depew, N. Y.; 37 working levers.

THE AMERICAN LOCOMOTIVE COMPANY has ordered from the General Railway Signal Company, 39 automatic train control equipments for locomotives which are being built for the New York Central.

THE CITY OF PHILADELPHIA (PA.) has contracted with the Union Switch & Signal Company to install complete signaling on its new Broad Street subway, six miles long. This subway extends from the City Hall (Market street) northward six miles to Olney avenue, and will be a two-track line but laid out with provision for an additional two tracks to be installed later. The contract calls for complete automatic block signaling, with electro-pneumatic interlocking and electro-pneumatic automatic train stops. There will be 264 color-light signals, 93 switches and 117 automatic stops. There will be interlocking plants at City Hall station, Spring Garden street, Girard avenue, Erie avenue, Olney avenue and Yard portal.

Supply Trade

The Hyman-Michaels Company, Chicago, has appointed the **Hofius Steel & Equipment Company,** Seattle, Wash., its representative in Washington and the Northwestern territory.

The Graybar Electric Company, New York, has opened a new distributing house at 1529-31 First avenue, North, Birmingham, Ala. The building has two floors providing about 18,000 sq. ft. of floor space.

Gordon L. Edwards, who has been elected treasurer of the **United States Steel Corporation,** with headquarters at New York, was born in 1884 in Brooklyn, N. Y., and was educated in the public schools, having graduated from the Brooklyn high school. He began work as an office boy in 1899 with the National Tube Company, in New York, and when the United States Steel Corporation was organized in 1901, he entered its service as office boy in the treasurer's office. He was subsequently promoted until in 1919 he was appointed assistant to the treasurer. In 1922 he was elected assistant treasurer, which position he held until his recent election as treasurer. Mr. Edwards also holds office in several subsidiaries, including railroads of the United States Steel Corporation.

G. L. Edwards

E. W. Thomas, Jr., has been appointed representative in the Chicago territory of the **Reading Iron Company,** Reading, Pa. Mr. Thomas' headquarters are at the company's Chicago office, 449 Conway building.

George Thomas, 3rd, has been appointed treasurer of the **Lukens Steel Company,** Coatesville, Pa. He was born at Whitford, Pa., and after being graduated from Haverford College, became affiliated with the Pennsylvania Steel Company at Steelton, in the open hearth department. He then served with the Standard Steel Works, Burnham, Pa., and subsequently was treasurer of the

Parkesburg Iron Company, Parkesburg, Pa. He later was consecutively with the Diamond State Steel Company, Wilmington, Del., and the E. B. Leaf Company, Philadelphia, until 1908, and then returned to the Parkesburg Iron Company, as treasurer and general manager of sales.

The Industrial Works, Bay City, Mich., has closed its district office at 823 South Oregon avenue, Tampa, Fla. The district office at Atlanta, Ga., in the Hurt building, will in future handle all the business of Florida, Alabama, Georgia, North Carolina, South Carolina and the eastern portion of Tennessee.

Theodore F. Merseles has been elected president of the **Johns-Manville Corporation,** New York, to succeed **H. E. Manville,** who has been elected chairman of the board. Theodore F. Merseles was born in Jersey City, N. J., on August 17, 1863. He entered railway service in 1881 as a clerk on the Pennsylvania at Jersey City and later became a clerk for the Trunk Line Association at New York, which position he held until 1893. From the latter date until 1899 he was manager and vice-president of the Western Wheel Works at Chicago, and during the following three years assisted in organizing the American Bicycle Company of New York and was its vice-president. In the latter year he became vice-president and general manager of the National Cloak & Suit Company at New York, and in 1921 he was elected president of Montgomery Ward & Co., which position he has held until his recent election.

T. F. Merseles

Obituary

Edwin S. Jackman, of E. S. Jackman & Co., Chicago, agents for the Firth-Sterling Steel Company, McKeesport, Pa., died on May 30, at Santa Barbara, Cal., at the age of 62.

Alexander Beal Brown, general representative, air brake department, Canadian Westinghouse Company, Limited, died at his home in Montreal, Que., on Wednesday, June 8, after an illness of several months. Mr. Brown was born June 6, 1873, in Scranton, Pa., where his father was assistant superintendent, motive power of the Delaware, Lackawanna & Western. After completing his education in the public schools at Scranton in 1887, he entered the employ of the Delaware, Lackawanna & Western as an apprentice in the machine shop. Later he was transferred to the air brake inspection department and made assistant to the air brake inspection foreman. In 1897 he became an assistant on the air brake instruction car

A. B. Brown

operated by the Westinghouse Air Brake Company. Subsequently he was made inspector of the Westinghouse Air Brake Compay at Buffalo, where he remained until 1903, when he was transferred to Hamilton, Canada, to act in a similar capacity with the Canadian Westinghouse Company. Since that time, his connection with the Canadian Westinghouse Company has been uninterrupted. L. K. Sillcox, general superintendent motive power, Chicago, Milwaukee & St. Paul, was in Montreal as chairman of the Mechanical Division meeting of the American Railway Association at the time of Mr. Brown's death. He paid a high tribute to Mr. Brown because of his interest in helping his fellows and particularly in assisting the younger men. It was Mr. Brown who helped to get Mr. Sillcox started on his railroad career.

Guy Eastman Tripp

Guy Eastman Tripp, chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, died on June 14, in the New York Hospital, New York City. Mr. Tripp was born in Wells, Maine, on April 22, 1865, and was educated at South Berwick (Maine) Academy. In 1897 he became associated with Stone & Webster, construction engineers and operators of public utilities, occupying successively important positions until he was elected vice-president of the Stone & Webster Management Association and also of the Stone & Webster Engineering Corporation.

In 1910, when Stone & Webster were called into consultation on the affairs of the Metropolitan Street Railway Company of New York, which had passed into receivership, Mr. Tripp was appointed its special representative, and later was selected as chairman of the joint committee on reorganization. After he completed his work as chairman of the joint committee, he was selected for the position of chairman of the board of directors of the Westinghouse Electric & Manufacturing Company, assuming his duties in February, 1912, in which capacity he continued until his death.

Shortly after the United States entered the World War, Mr. Tripp was selected as chief of the production division of the ordnance department, U. S. A. He entered the service in January, 1918, as a major in the ordnance department, and within ten months was made a brigadier-general and assistant to the chief of ordnance of the United States Army. Upon leaving the service immediately after the Armistice, he was awarded the distinguished service medal by the President of the United States for particularly meritorious service.

Recognizing the importance of the rapid production of war material as a factor in the national defense, Mr. Tripp continued his co-operation with the War Department in its plans for industrial preparedness. He was a member of the Advisory Board of the New York Ordnance District and had for several years held the office of president of the New York Post—Army Ordnance Association.

U. & U.

Guy E. Tripp

In 1923 and 1924 Mr. Tripp traveled around the world and was, for several weeks, in Japan where he effected co-operative arrangements with the Mitsubishi interests, and was decorated by the Emperor with the Second Class Order of the Sacred Treasure, the highest honor that can be conferred by that nation on a private citizen. In the past few years Mr. Tripp had manifested an especially keen interest in the future of electrical development in America. Some of his articles and addresses on power development were published under the title of "Super-Power as an Aid to Progress," and, in the fall of 1926, he published a book entitled "Electric Development as an Aid to Agriculture." He was a director in a large number of industrial companies and a member of many important clubs and societies.

Construction

C. & O. to Spend $12,000,000 at Covington and Cincinnati

THE CHESAPEAKE & OHIO proposes a number of improvements in Covington-Cincinnati territory. The work consists of renewing the approaches to the Licking river bridge, about 1,000 ft., with modern structures, at Covington, Ky. Between Licking river bridge and Covington yard five bridges over streets will be renewed with modern structures, having concrete and ballast floors carrying the track. Two viaducts in this section about 400 ft. in length will be filled. At Madison avenue, Covington, the present grade crossing will be eliminated and underpass provided. The tracks between Fifteenth street, Covington, and the south bank of the Ohio river will be raised on fill, so that the grade will be 0.3 per cent as compared with 1 per cent as at present. Four tracks will be added between Twelfth street and Eighth street and two tracks will be added from Eighth street to Sixth street. From Twelfth street to Sixth street, inclusive, the present grade crossings will be eliminated and overhead bridges or subways provided, except that Ninth street will be closed. From Fifth street to the south bank of the Ohio river a modern double track viaduct with concrete and ballast floor carrying the track will be built. A new bridge will be built across the Ohio river immediately down stream from the present bridge, consisting of two 450 ft. shore spans and one 675 ft. channel span. On the Ohio side of the river the present viaduct approach from the south bank of the Ohio river to Mill street will be replaced with modern structure and from Mill street to the Big Four tracks, the present single track viaduct will be replaced by building a double track steel viaduct.

The single track Inter-Terminal railroad from Second and Smith streets to Fifth and Baymiller streets, where it connects with the B. & O., and which is supported on a steel viaduct, will be double tracked. The present bridge over the Ohio river will be converted into a highway bridge, the tracks being removed therefrom and concrete slab placed between the trusses which will provide a three-way driveway. The railroad viaduct approaches on each side of the bridge will also be removed and replaced with highway approaches with entrance at Fourth and Main streets, in Covington, and Smith and Third streets in Cincinnati, as at present. The tracks at the passenger station, Pike street, Covington, Ky., will be elevated about 16 ft. and three covered platforms, each about 900 ft. long, will be provided, one on each side of the four tracks and one in the center, so that all tracks will be served by platforms. The platforms will be reached by subway and steps from the passenger station and baggage elevators will be provided in each platform to handle baggage from the station level to the track level. The cost of the work will amount to approximately $12,000,000.

BALTIMORE & OHIO.—This road has let a contract for the construction of a subway under the tracks at Amcelle, Md., to cost about $19,000, to the Vang Construction Company.

BOSTON & MAINE.—The road is now engaged on an extensive program of improved facilities, according to General Superintendent Samuel E. Miller in a report to the New England Shippers Advisory Board at its second annual meeting at Manchester, N. H., June 10. Mr. Miller gave the details of projects for improved service on the Boston & Maine aggregating about $8,000,000. He announced the extension of plans for the modernization and unification of the Boston & Maine's freight terminals at Boston "to include two new car retarder equipped classification yards, one inbound and one outbound. The inbound yard will parallel the old Southern division main line tracks, between Washington St., Somerville, and the Boston and Maine's new office building at Lechmere square. The outbound yard will parallel Washington street on the Somerville side. Construction on each of these yards is now under way," he said. At Mechanicville, N. Y., the Boston & Maine's western classification yard, 25 miles beyond the Hudson river, a complete rehabilitation of the classification and terminal facilities is under way. A car retarder system is being installed here also with the object of further speeding up classification and switching work, to hasten the movement of cars into New England, and to perform the work more efficiently and more economically. This project involves an expenditure of about $380,000. At White River Junction, Vt., the new classification yard at which the Boston & Maine will exchange traffic to and from both of its Canadian connections is now well advanced and in partial operation.

CANADIAN NATIONAL.—A contract has been let to the Cooke Construction Company, Montreal, Que., for the grading of an extension of line from St. Felicien, Que., to Mistassini, 27.5 miles. This line, which it is estimated will cost $1,463,000, will involve the construction of bridges over the Ashuapmouchouan and the Ticouabe rivers.

CANADIAN PACIFIC.—Plans have been prepared for the construction of a two-story concrete and brick office building with outside dimensions of 90 ft. by 40 ft. at North Bend, B. C., to cost about $36,000. The building will be used as a yard and dispatching office and will contain fourteen bedrooms, with two bathrooms, and a dining room. This company will also construct a five-stall brick and steel addition to the enginehouse at Nelson, B. C., with stalls 85 ft. long.

CANADIAN PACIFIC.—Contracts have been let to W. A. Dutton, Winnipeg, Man., for the grading of extensions of line from Asquith, Sask., northwest 20 miles, and from Rosetown, Sask., northeast 21 miles. A contract for the grading of an extension from Cutknife, Sask., North to Whitford Lake, 66 miles, leaving the main line, at Clandonald, has been awarded to Roosa & Wickstrand, Winnipeg. The Commercial Cartage Company, Calgary, Alta., has been awarded a contract for the grading of an extension from Cassils, Alta., south 22 miles. Contracts have been let to J. H. Simmons, Winnipeg, for the construction of a six-stall brick addition to the roundhouse at Alyth, Alta., and for the construction of a one-story concrete combined passenger and freight station at Trail, B. C.

CHICAGO & NORTH WESTERN.—This company has let contracts involving the expenditure of about $200,000 for concrete piers and abutments for the 1927 bridge betterment program as follows: For the Wyoming and Black Hills divisions, to Peppard & Burrill, Minneapolis, Minn.; for the Madison division, to Duffy-Jutton Company, Milwaukee, Wis.; for the Peninsula, Lake Shore and Ashland divisions, to the Adrian Construction Company, Green Bay, Wis.; for the Southern Illinois division, to S. G. Cool, Chicago; for the Iowa division, to Gaffin & Gehri, Fond du Lac, Wis.; for the Minnesota division, to the Widell Company, Mankato, Minn. Including steel, which will be placed by company forces, these bridge replacements will cost a total of about $400,000.

DELAWARE, LACKAWANA & WESTERN.—This road has let a contract for grade elimination at E. Alexander, N. Y., to cost about $75,000 to the James S. McCormack Company, of Easton, Pa.

GREAT NORTHERN.—The Interstate Commission has issued a certificate authorizing the construction of a new line between Berne and Scenic, Wash., 10 miles, via the new Cascade tunnel, and the abandonment of the old line between the same points, about 17 miles.

GULF & SHIP ISLAND.—A contract for the construction of cinder and sand handling facilities at Mendenhall, Miss., has been let to the Zitterell-Mills Company, Webster City, Iowa. This project involves the construction of sand bins, a sand dryer and compresser house and cinder pits.

MISSOURI-KANSAS-TEXAS.—This company plans the construction of a one-story reinforced concrete pumping house and oil storage tanks at Parsons, Kans., at an estimated cost of $45,000.

MISSOURI PACIFIC.—This company has let a contract to the List Construction Company, Kansas City, Mo., for grading, draining and construction of bridges and culverts on the second main track between Curtis, Ark., and Bierne, ten miles. The total project is expected to cost around $863,000.

NEW YORK CENTRAL.—A contract has been let to Joseph E. Nelson and Sons, Chicago, for the construction of a brick and concrete interlocking tower at Gibson, Ind., estimated to cost about $12,000.

NORTHERN PACIFIC.—A contract for the grading and track laying on an extension from Glendive, Mont., to Brockway, 62 miles, has been let to Foley Brothers, St. Paul, Minn., at a cost of about $1,000,000.

PENNSYLVANIA.—This company has let a contract for the construction of a signal tower and breaker house at Jersey City, N. J., to Stevens-Alquist, Inc., of Hackensack, N. J., and a contract for building a fender for the bridge over the Delaware and Chesapeake canal, at Canal, Del., to the Armstrong, Latta Company, Philadelphia.

ST. LOUIS-SAN FRANCISCO.—A contract has been let to the C. G. Kershaw Contracting Company, Birmingham, Ala., for the construction of a 24-stall frame roundhouse at Yale, Tenn., at a cost of about $75,000. A contract has also been awarded to this company for laying rail and ballasting on the new line between Aberdeen, Miss., and Aliceville, Ala., 57 miles, at a cost of approximately $200,000.

SAN BENITO & RIO GRANDE VALLEY.—The Interstate Commerce Commission has issued a certificate authorizing the construction of an extension from a point near La Paloma, Tex., in a general southeasterly direction for about 7 miles, but has denied the application as to a further extension of 8 miles to Brownsville, Tex., which the company desired to postpone for three years. "As a general rule," the commission's report says, "we are not inclined to issue certificates of public convenience and necessity effective at so distant a date, and there is no showing in this record which would warrant us in deviating from this general rule."

SEABOARD AIR LINE.—The Interstate Commerce Commission has granted an extension of time to November 1 for the completion of the line of the Seaboard-All Florida from West Palm Beach to Florida City, Fla.

UNION PACIFIC.—Plans have been announced by this company for the construction of a tourist lodge and necessary facilities in connection with it at Bright Angel Point, Ariz., in the Grand Canyon National Park. In addition to the main lodge present plans call for the construction of 70 sleeping lodges, a hydro-electric power plant on Bright Angel Creek, a water supply system and sewage disposal system at a total cost of about $550,000, to be completed by June 15, 1928.

WABASH.—A contract for the construction of a one-story brick passenger station at Excelsior Springs, Mo., estimated to cost $25,000, has been let to T. H. Johnson, Sedalia, Mo. A contract has been let to P. J. Hannan & Co., St. Louis, Mo., for the construction of a steel and concrete viaduct over Vandeventer avenue at Market street, St. Louis.

THE GALLATIN GATEWAY INN at Gallatin Gateway, Mont., was formally opened by the Chicago, Milwaukee & St. Paul on June 17, for operation in connection with its new train service to Yellowstone National Park.

Railway Finance

BALTIMORE & OHIO.—*Sale of stock.*—At a meeting of the board of directors of this company, June 9, it was determined, subject to the approval of the Interstate Commerce Commission, to issue and sell 632,425 additional shares of common stock, and to offer to the holders of its preferred and common stock the right to subscribe, on or before July 21, 1927, at $107.50 per share (with an adjustment of interest as of dates of payments) for a number of shares of such additional common stock equal to thirty per cent of the number of shares of preferred or common stock of the company registered in their respective names on the company's books at the close of business on June 20, 1927. Warrants will be issued to each stockholder as soon as possible after June 20, 1927, specifying the amount of stocks in respect to which such stockholder is entitled to a subscription privilege. Subscriptions are to be made on or before July 21, 1927, and payment is to be made either in full at the time of subscription or $32.25 at the time of subscription and the balance on December 1, 1927. The proceeds of this issue are to be applied to the redemption on or before January 1, 1928, of the company's $35,000,000 of ten year six per cent secured gold bonds, maturing July 1, 1929, to reimburse the treasury of the company in part for expenditures made in 1926 and up to June 1, 1927, for additions and betterments to the company's property and for future additions and betterments, extensions and improvements to the company's facilities and for other corporate purposes. For the year 1926, the net income of the company, giving effect to the retirement of the $35,000,000 of ten year six per cent secured gold bonds, but without making any allowance for the earnings of the balance of the proceeds of this issue, after deducting federal income taxes and the dividends upon the preferred stock, was $27,956,766, or about $13 per share upon the common stock of the company, including the new issue. The net income of the company for the first four months of the current year exceeded by $1,484,718, the net income for the same period of 1926. The subscription by shareholders has been underwritten by Kuhn, Loeb & Company, Speyer & Company, and the National City Company.

BOSTON & MAINE.—*Acquisition.*—This company has been authorized by the Interstate Commerce Commission to acquire and operate approximately a mile of line of the York Harbor & Beach, in York county, Maine, serving the Kittery navy yard.

CANADIAN NATIONAL.—*Bonds.*—A $65,000,000 issue of this road's 30-year 4½ per cent gold bonds, dated July 1, 1927, and due July 1, 1957, was offered for sale June 10 at 98½ and interest to yield about 4.60 per cent. The bonds are not callable prior to maturity. It is understood that the purpose of the issue is to provide funds to meet capital and other expenditures incurred or to be incurred under the budgets of the Canadian National for 1926 and 1927; for the refunding of $20,000,000 of three-year notes maturing July 1, 1927; and for branch lines and terminal construction. The issue is guaranteed unconditionally by the government of Canada as to both principal and interest.

CHESAPEAKE & OHIO.—*Extension of Option Time.*—The executive committee of this road have instructed W. J. Harahan, president, to ask W. L. Ross, president of the New York, Chicago & St. Louis, for a 90-day extension of its option to purchase its 174,900 common shares of Pere Marquette. The option expires July 1.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized an issue of $1,950,000 of equipment trust certificates, to be sold to the highest bidder.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Extra Dividend.*—Directors of this company have declared an extra dividend of $1 a share on common stock in addition to the regular semi-annual dividend of $2.50 on the common and $2 on the preferred.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has denied this company's application for an extension of time beyond June 30 within which it may pledge an issue of $1,000,000 of first and refunding mortgage bonds, previously authorized by the commission. The report says that in addition to these bonds the company has in its treasury available for pledge $14,945,000 of first and refunding bonds, "which is ample for its immediate necessities," and that it has shown no present need to pledge the additional bonds.—*Equipment Trust.*—The commission has also authorized an issue of $8,815,000 of equipment trust certificates to be sold at not less than 98.857.

CHICAGO, ROCK ISLAND & PACIFIC.—*Sale of Equipment Trust.*—This road's issue of $8,515,000 of 4½ per cent equipment trust certificates went to the group headed by the Bankers Trust Company on the bid of 98.857. Other bids for the issue were made by Harris, Forbes & Co, and Edward B. Smith & Co., who offered 98.8172 and by Halsey, Stuart & Co., Inc., who bid 98.444. Public offering of the issue is expected shortly. Associated with the Bankers Trust Company are the Union Trust Company at Pittsburgh, Brown Brothers & Co., Kissel, Kinnicutt & Co., Evans, Stillman & Co., and Harrison Smith Company.

NEW YORK CENTRAL.—*Increase in Dividend Rate.*—The board of directors on June 15 raised the annual dividend rate on the common stock from $7 to $8 annually. A similar increase was made in the rate on common stock of the Cleveland, Cincinnati, Chicago & St. Louis, 91 per cent of which is controlled by the Central. Michi-

gan Central common, of which more than 99 per cent is controlled by the Central, increased its rate from $35 to $40.

NEW YORK, NEW HAVEN & HARTFORD.—*Negotiations for Payment to Government Rumored.*—This company was reported on June 15 to be negotiating with the Treasury Department for the repayment of $87,000,000 of obligations due the government. The railroad pays 6 per cent to the government for the $87,000,000 advances and it was said that the road might profitably refund this amount at lower rates of interest.

NORTHERN PACIFIC. — *Abandonment.* — The Interstate Commerce Commission has denied this company's application for authority to abandon its Boulder-Elkhorn branch, from Great Northern Transfer to Queen Siding, Mont., about 21 miles, stating that the territory served by the branch line should continue to have rail transportation but expressing the belief that the branch should be operated by the Great Northern and that the carriers should enter into negotiations for the accomplishment of that purpose.—*Valuation.*—The commission has postponed from July 25 to August 10 the hearing on the company's tentative valuation.

OLD COLONY.—*Sale of Stock.*—This company is planning to issue 8,917 additional shares of its stock at $100 par at auction to the highest bidder at not less than par. The current bids for small lots is $135.50. The proceeds of this sale, which was approved June 8 by the Massachusetts Department of Public Utilities, will be used to repay the New York, New Haven & Hartford for permanent improvements on the Old Colony lines.

SEABOARD AIR LINE.—*Lease of line.*—S. Davies Warfield, president of the Seaboard Air Line, announced, June 10, the acquisition of the Georgia, Florida & Alabama, subject to the approval of the Interstate Commerce Commission. This line is approximately 191 miles long, and runs from Richland, Ga., a point on the Savannah-Montgomery line of the Seaboard and connects with the Seaboard's Jacksonville-River Junction line which it crosses at Tallahassee, thence to Carrabelle, Fla., on the Gulf of Mexico. Mr. Warfield said that the Seaboard had leased this railroad for ninety-nine years at an annual rental, and that the road would become an integral part of the Seaboard system. The gross revenue of the Georgia, Florida & Alabama Railway for the year 1926, he stated, was approximately $1,500,000.

VIRGINIAN.—*Sale of Stock.*—A block of 10,000 shares of Virginian, or approximately one-half of the common stock in the hands of the public, has been purchased by Adams & Peck, who recently sold about 5,000 shares privately. Of the $31,271,500 common stock of the Virginian, $29,203,800 is in a voting trust, which also holds all the preferred stock. Virtually all of the voting trust certificates are owned by heirs of Henry H. Rogers.

WASHINGTON & CHOCTAW.—*Abandonment.*—This company has been authorized by the Interstate Commerce Commission to abandon its line from Bolinger to Cantwell, Ala., approximately 10 miles.

WESTERN NEW YORK & PENNSYLVANIA. — *Recapitalization.* — Announcement was made June 14 that the tentative plan now under consideration by the Western New York & Pennsylvania Railway Company is to have the minority holders exchange their outstanding common stock for a new non-cumulative five per cent preferred stock, on the basis of $25 par value of new preferred stock for each $50 par value of common stock. This new preferred stock would rank ahead of about $24,000,000 of common stock to be issued to the Pennsylvania Railroad Company to pay for past capital expenditures. The minority holdings of outstanding income bonds are to be exchanged for the new preferred stock on the basis of $600 par value of five per cent preferred stock for each $1,000 par value of outstanding income bonds. The Pennsylvania Railroad Company will agree to accept for its holdings of common stock and income bonds a figure considerably below that offered to the outside holders—provided the latter will assist in carrying out the plan. The new preferred stock may, at the option of the company, be redeemed at 105 per cent of par on any dividend date five years after the date of issue.

Average Price of Stocks and Bonds

	June 14	Last week	Last year
Average price of 20 representative railway stocks..	112.61	114.96	94.48
Average price of 20 representative railway bonds..	93.67	94.23	91.66

Valuation Reports

The Interstate Commerce Commission has issued final or tentative valuation reports, finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates, as follows:

Tentative Reports

Tampa Union Station.....	$335,000	1918
New York Connecting.....	24,500,000	1918

Dividends Declared

Albany & Susquehanna.—4½ per cent, payable July 1 to holders of record June 15.

Beech Creek.—$0.50, quarterly, payable July 1 to holders of record June 15.

Boston & Providence.—2½ per cent, payable July 1 to holders of record June 20.

Chicago, Indianapolis & Louisville.—Common, 2½ per cent semi-annually; common, 1 per cent, extra; preferred, 2 per cent semi-annually, all payable July 11 to holders of record June 25.

Great Northern.—Preferred, 2½ per cent, payable August 1 to holders of record June 25.

Mobile & Ohio.—$3.50, semi-annually, payable June 28 to holders of record June 17.

Morris & Essex.—$1.75, payable July 1 to holders of record June 7.

New York & Harlem.—Common and preferred, $2.50, payable July 1 to holders of record June 15.

New York, Lackawanna & Western.—1¾ per cent, quarterly, payable July 1 to holders of record June 14.

Northern Pacific.—1¼ per cent, quarterly, payable August 1 to holders of record June 25.

Pittsburgh, McKeesport & Youghiogheny.—$1.50, quarterly, payable July 1 to holders of record June 15.

Rensselaer & Saratoga.—4½ per cent, payable July 1 to holders of record June 16.

Southern.—Common, 1¼ per cent, quarterly, payable August 1 to holders of record July 1. Preferred, 1¾ per cent, quarterly, payable July 15 to holders of record June 21.

Wabash.—Preferred A, 1¾ per cent, quarterly, payable August 25 to holders of record July 23.

Officers

Executive

John W. Seens has been elected president of the Essex Terminal, with headquarters at Walkerville, Ont.

L. S. Benjamin has been elected vice-president and general manager of the Rio Grande, Micolithic & Northern, with headquarters at Houston, Tex.

W. G. Jones, superintendent of the North Carolina division of the Seaboard Air Line, with headquarters at Hamlet, N. C., has been appointed assistant to vice-president—operations, with headquarters at Savannah, Ga.

E. P. McLain, Seaboard Air Line, has been detailed for special work at the request of the president, to whom he will report, with the title of agent, executive department, with headquarters at Miami, Fla.

Financial, Legal and Accounting

R. F. Scott, Jr., has been appointed treasurer of the Paris & Mt. Pleasant, with headquarters at Paris, Tex.

W. W. Smithey, auditor of the Railroad Commission of Texas at Austin, Tex., has been appointed auditor of the Rio Grande, Micolithic & Northern, with headquarters at Houston, Tex.

T. H. Best, assistant to the treasurer of the Central region of the Canadian National, with headquarters at Toronto, Ont., has been appointed treasurer of the Canadian National Telegraphs, with headquarters at the same point.

Operating

A. H. Ehlers has been appointed superintendent of the Copper Range, with headquarters at Houghton, Mich.

Paul W. Tillisch, chief clerk to the general superintendent of the Great Northern at Spokane, Wash., has been promoted to transportation inspector, with headquarters at the same point.

A. R. Pelnar, formerly assistant superintendent and transportation inspector on the Chicago & North Western at Chicago, has been appointed assistant to the general manager, with headquarters at the same point.

E. D. Hanes, superintendent of the coal terminal of the Virginian, with headquarters at Sewalls Point, Va., has been appointed acting superintendent of the New River division, with headquarters at Princeton, W. Va., succeeding **J. W. White**, superintendent, who has been granted a leave of absence on account of illness.

F. M. Christen has been appointed acting superintendent of dining and sleeping cars of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., succeeding **Charles F. Sundell**, who has been granted a leave of absence on account of ill health.

Robert H. Corson, who has been appointed superintendent of telegraph of the Erie, with headquarters at Paterson, N. J., entered the train dispatcher's office of the Erie's Greenwood Lake Railroad at Jersey City, N. J., in February, 1881. In October of the same year he was transferred to Paterson, and three months later to the Jersey City train dispatcher's office, working as

R. H. Corson

operator, copier, dispatcher's clerk and extra dispatcher. He was transferred to the New York office in 1892. He became telegraph inspector in 1902, and under the late superintendent E. P. Griffith, Mr. Corson planned and supervised the installation in 1908 and 1909 of the first telephone train dispatching circuits on the Erie. He was advanced to assistant superintendent of telegraph of the Erie in 1914, which position he was holding at the time of his recent appointment as superintendent of telegraph.

C. H. Sauls, superintendent of the Virginia division of the Seaboard Air Line, with headquarters at Raleigh, N. C., has been transferred in the same capacity to the North Carolina division, with headquarters at Hamlet, N. C., succeeding **W. G. Jones**, promoted, and **L. T. Foster**, now superintendent of the East Carolina division at Charleston, S. C., has been transferred to the Virginia division to succeed Mr. Sauls. **T. A. Norris**, trainmaster of the North Carolina division at Hamlet, N. C., has been appointed superintendent of the East Carolina division, with headquarters at Charleston, S. C., succeeding Mr. Foster. **C. E. Matthews**, passenger trainmaster of the North Carolina division at Hamlet, N. C., has been appointed general supervisor of passenger operations, with headquarters at Savannah, Ga. **W. R. Olive**, assistant trainmaster of the North Carolina division at Hamlet, has been appointed trainmaster of the same division, with the same headquarters, succeeding Mr. Norris. **W. B. Carson** has been appointed passenger trainmaster of the North Carolina division at Hamlet, succeeding Mr. Matthews, and **W. A. Smith** has been appointed assistant trainmaster of the North Carolina division at Hamlet, succeeding Mr. Olive.

R. K. Rochester, who has been appointed assistant general manager of the Eastern region of the Pennsylvania, with headquarters at New York, was born December 7, 1877, at Simcoe, Ont., and was graduated from the Rose Polytechnic Institute in Terre Haute, Ind. He entered railway service on November 10, 1901, and until May 1, 1902, served as assistant engineer maintenance of way of the Michigan division of the Vandalia Railroad (now a part of the Pennsylvania). From the latter date until November 1 of the same year he served as acting engineer maintenance of way of the same division and then became engineer maintenance of way, which position he held until June 1, 1905. From that time until May 1, 1909, he was principal assistant engineer of the same road, and was then appointed division engineer of the St. Louis division. He remained there until July 1, 1913, and was then appointed superintendent of the Peoria division, which position he held until April 1, 1914, when he became superintendent of the Logansport division of the Pittsburgh, Cincinnati, Chicago & St. Louis (now also a part of the Pennsylvania). From January 1, 1917, until February 11, 1918, Mr. Rochester served as superintendent of the Cleveland and Pittsburgh division of the Pennsylvania. From the latter date until January 16, 1919, he was in

R. K. Rochester

military service. On January 16, 1919, he became superintendent on special duty in the office of the general manager of the Western lines of the Pennsylvania, which position he held until August 16 of the same year. From that date until March 1, 1920, he was superintendent of the Cleveland and Pittsburgh division of the Western lines, and was then appointed general superintendent of the Central Ohio division of the Southwestern region of the Pennsylvania at Columbus, Ohio. In January, 1924, Mr. Rochester was appointed to a similar position on the Northern division at Buffalo, N. Y. In April, 1926, he was transferred in the same capacity to the New Jersey division, which position he was holding at the time of his recent appointment.

Traffic

Albert C. Linton, who has been promoted to general passenger agent of the Illinois Central, with headquarters at New Orleans, La., was born at Chillicothe, Mo., on October 21, 1884. After attending high school and commercial

Albert C. Linton

college he entered railway service in August, 1905, as a stenographer in the city passenger office of the I. C. at Chicago. The following year Mr. Linton was advanced to chief clerk in the division passenger office at St. Louis, Mo., becoming chief clerk to the assistant general passenger agent at New Orleans in 1911. In 1916 he was appointed traveling passenger agent at Memphis, Tenn., serving at that point and at Chicago until 1918 when he was appointed chief clerk in the general passenger office at Memphis. Mr. Linton was promoted to assistant general passenger agent, with headquarters at New Orleans, in 1920, a position he held until his further promotion to general passenger agent, with headquarters at the same point, on June 1.

H. M. Fletcher, formerly manager of the organization tours department of Raymond & Whitcomb Company at Boston, Mass., has been appointed assistant general passenger agent of the Northern Pacific, with headquarters at New York.

J. J. Heron, assistant to the freight traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., has been promoted to assistant general freight agent, with headquarters at the same point. **J. P. Dennis** has been appointed assistant to the freight traffic manager, succeeding Mr. Heron.

The headquarters of the traffic department of the Southern Pacific of Mexico, has been moved from Guaymas, Son., to Guadelajara, Jal., and **V. H. Richardson** has been appointed assistant general passenger agent, with headquarters at the latter point.

Gilbert W. Miller has been appointed assistant to the freight traffic manager of the Maine Central. **Lucien Snow**, chief of tariffs at Portland, Me., has also been appointed assistant to the freight traffic manager and the position entitled chief of tariffs has been abolished.

Garnett King and **F. S. Howard**, assistants to the passenger traffic manager of the Southern Pacific, with headquarters at San Francisco, Cal., have been promoted to assistant passenger traffic managers, with headquarters at the same point. **Nelson Kinell**, general passenger agent, with headquarters at San Francisco, has been promoted to assistant passenger traffic manager, with headquarters in the same city. **E. E. Wade**, assistant general passenger agent, with headquarters at San Francisco, has been promoted to assistant to the passenger traffic manager, with headquarters at the same point.

Thomas J. Fretz, who has been appointed traffic manager of the Lehigh & New England, with headquarters at Bethlehem, Pa., was born on August 5, 1865, at Fullerton, Pa., and was educated in the public schools. He entered railway service on March 17, 1882, with the Lehigh Valley as a telegraph operator at Fullerton, Pa. From October 1, 1886, until January 1, 1890, he was waybill clerk at Allentown, Pa., and from the latter date until September 1, 1893, served as chief clerk at the same place. Mr. Fretz then became assistant freight and passenger agent at Allentown, which position he held until November 10, 1895. From that time until May 15, 1905, he was freight and passenger agent at the same place, and was then appointed division freight agent at South Bethlehem, Pa. All this service was with the Lehigh Valley. On December 15, 1906, Mr. Fretz entered the service of the Lehigh & New England as general freight and passenger agent at Bethlehem, Pa., which position he was holding at the time of his recent appointment as traffic manager.

J. A. Simmons, general traffic manager of the Cincinnati, Indianapolis & Western (which has now become a part of the Baltimore & Ohio), with headquarters at Indianapolis, Ind., has been appointed freight traffic manager of the Baltimore & Ohio, with the same headquarters. Mr. Simmons will have charge of territory west of Hamilton, O., to Springfield, Ill., and Springfield Branch, St. Louis division, Beardstown to Flora, Ill., exclusive. **R. B. Kinkaid**, general freight agent of the Cincinnati, Indianapolis & Western at Indianapolis, has been appointed assistant general freight agent of the Baltimore & Ohio at Cincinnati, O. **D. C. Odell**, assistant general freight agent of the Cincinnati, Indianapolis & Western at Springfield, Ill., has been appointed division freight agent of the Baltimore & Ohio, with the same headquarters. He will have charge of territory, Indianapolis division, Decatur, Ill., and west, and Springfield Branch, St. Louis division, Beardstown to Flora, Ill., exclusive. **P. M. Havens**, assistant general freight agent of the Cincinnati, Indianapolis & Western at Indianapolis, has been appointed division freight agent of the Baltimore & Ohio, with the same headquarters. He will have charge of territory, Indianapolis division, west to, but not including Decatur, Ill. **W. M. Smothers** has been appointed district freight agent of the Baltimore & Ohio, with headquarters at Decatur, Ill.

F. W. D. Goddard, who has been appointed general freight and passenger agent of the Lehigh & New England, with headquarters at Bethlehem, Pa., was born on March 18, 1889, at Chicago, and was educated in private schools at Brooklyn, N. Y. He entered railway service on March 1, 1908, with the Atchison, Topeka & Santa Fe in their New York office. He served as office boy, bill of lading clerk and freight rate clerk. He was transferred to the general offices at Chicago, and was there employed until August 1, 1913, as tariff compiler. Mr. Goddard left the Santa Fe and returned to New York as tariff man on the New York Central, and then served as rate clerk in the general freight agent's office of the New York Central Railroad until November 1, 1915. He then entered the service of the Great Northern in their New York office as chief clerk and freight solicitor where he remained until the outbreak of the War. During the War, Mr. Goddard served in the Inland Traffic division of the War Department. From 1919 until April 1, 1922, he was engaged in various industrial traffic positions with the Koster Company and the General Motors Export Company. On April 1, 1922, he resumed railroad service with the Reading as chief clerk in its New York agency, serving then as freight traffic representative and then as assistant general agent until January 1, 1926, when he was appointed assistant general freight and passenger agent of the Lehigh & New England, which position he was holding at the time of his recent appointment as general freight and passenger agent.

Mechanical

H. W. Yates has been appointed master mechanic of the Rio Grande, Micolithic & Northern, with headquarters at Van Horn, Tex.

J. R. Vance, mechanical inspector of the Gulf Coast lines, with headquarters at Houston, Tex., has been promoted to chief mechanical inspector of the Gulf Coast lines and the International-Great Northern, with headquarters at the same point.

Engineering, Maintenance of Way and Signaling

C. R. Adsit, assistant division engineer of the Chicago division of the Baltimore & Ohio, with headquarters at Garrett, Ind., has been appointed acting division engineer of the Indianapolis division, with headquarters at Indianapolis, Ind., succeeding **H. F. Passel**, transferred to valuation work. **J. G. Begley**, assistant on the engineering corps of the Akron division, with headquarters at Akron, Ohio, has been promoted to assistant division engineer of the Chicago division, succeeding Mr. Adsit.

Special

R. W. Ball, general superintendent of the Eastern lines of the Canadian National Telegraphs, with headquarters at Toronto, Ont., has been transferred to the Western lines, with headquarters at Winnipeg, Man., succeeding **G. H. Stead**, who has been appointed superintendent, with jurisdiction over lines in British Columbia and headquarters at Vancouver, B. C. **J. F. McTaggart**, treasurer, with headquarters at Toronto, has been appointed to succeed Mr. Ball.

Obituary

Robert Craig, assistant engineer on the Missouri Pacific, with headquarters at St. Louis, Mo., died on June 2 at the Missouri Pacific Hospital in that city.

John L. A. Baldwin, district superintendent of the Pullman Company, with headquarters at South Station, Boston, Mass., died in Albany, N. Y., on June 12 of a heart attack.

Viscount Cowdray, whose contracting firm, S. Pearson & Son, Ltd., London, England, constructed the East River tunnel of the Pennsylvania, died on May 1 at Dunecht House, Aberdeenshire, Scotland. He was born on July 15, 1856, at Brickendonbury, Herts, England. After serving an apprenticeship in the contracting firm founded by his grandfather, Lord Cowdray (Weetman Dickinson Pearson) became a partner in 1876. The company enlarged its activities in 1889 when it undertook a group of contracts in Mexico which included the construction of railways, harbors and waterworks. Largely because of his success in constructing the Blackwell tunnel under the Thames River in England within the estimates of cost, Mr. Pearson's company was given the contract by the Pennsylvania for construction of the four tunnels under the East River at New York in 1903. The first tunnel was completed in July, 1909, connecting Manhattan with Long Island City and Sunnyside yard.